University of Alberta

Colors, Smiles, and Frowns: External Affective Cues Can Directly Affect Responses to Persuasive Communications in a Mood-like Manner Without Affecting Mood

by

Alexander S. Soldat

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of requirements for the degree of Doctor of Philosophy

Department of Psychology

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36 Harrow Circle
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University of Alberta

Faculty of Graduate Studies and Research

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "Colors, Smiles, and Frowns: External Affective Cues Can Directly Affect Responses to Persuasive Communications in a Mood-like Manner Without Affecting Mood" submitted by Alexander S. Soldat in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

Dr. Robert Sinclair
Supervisor

Dr. Donald Kuiken

Dr. Michael Enzle

Dr. Norman Brown

Dr. John Pracejus

May 25, 2001

Dr. James Olson
External Reader

Abstract

I argue that external affective cues provide information that directly affects processing strategy without affecting mood. Positively valenced (i.e., happy) cues lead to nonsystematic processing and negatively valenced (i.e., sad) cues lead to systematic processing. Three studies addressed this issue. In Study 1, participants were exposed to a set of strong or weak arguments supporting comprehensive examinations for graduating students (Petty & Cacioppo, 1984) printed on either red (positively valenced external affective cue) or blue (negatively valenced external affective cue) paper. After participants read the arguments their mood and attitudes toward comprehensive exams were measured. The results showed that the blue paper participants elaborated the arguments and were persuaded by strong arguments only, while the red paper participants did not elaborate and were persuaded to the same extent by both strong and weak arguments. There were no differences in mood between the groups. In Study 2, under the auspices of a study addressing impromptu speeches, participants read aloud arguments from Study 1 to an audience who responded either favorably (i.e., smile; positively valenced external affective cue) or with a serious facial expression (i.e., somber expression; negatively valenced external affective cue). In Study 3, participants read arguments used in Studies 1 and 2 on a computer

screen while photographs of smiling or frowning faces were presented on the screen below threshold of awareness. The results of Study 1 were conceptually replicated in Studies 2 and 3. The results are discussed in the context of an extension of the cognitive tuning hypothesis to the area of external cues, in terms of implications for other models of the effects of affective states on judgmental processes, and finally, in the broader context of the adaptive nature of tuning to situational signals.

Dedication

I would like to dedicate this thesis to my cats Rasky and Tikki, true companions and inexhaustible sources of inspiration. They have contributed to the completion of this work more then they could ever know.

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Chapter 1

INTRODUCTION

The Process of Persuasion

One of the first systematic research programs in social psychology addressing attitudes and persuasion was carried out at Yale University more than fifty years ago. This program of research culminated in a seminal work on communication and persuasion by Hovland, Janis, and Kelley (1953). This work coined such classic terms as "the sleeper effect" where an initial source credibility effect on persuasion (i.e., more credible sources lead to more persuasion) diminishes about three weeks following exposure to the source information and the persuasive message. More importantly, the Hovland group identified the individual steps that lead to persuasion: attention, perception, interpretation, learning, and acceptance. And, they identified critical factors that affect persuasion at each of these steps: the source of the message; the message itself; and the perceiver.

Much research has addressed aspects of the source of the communication and found that expert (e.g., Aronson, Turner, & Carlsmith, 1963), trustworthy (e.g., Walster, Aronson, & Abrahams, 1966), and likeable (e.g., Roskos-Ewoldsen & Fazio, 1992) sources tend to be more persuasive. However, the more important issues to discuss, in light of the topic of this paper, are the aspects of the communication and the perceiver's response to it.

Cognitive Response Theory

Cognitive response theory suggests that persuasion occurs as a result of the generation of positively valenced thoughts in response to the persuasive message (Petty, Ostrom, & Brock, 1981). If the arguments in the message are cogent and issue-relevant, the thoughts that are generated are favorable and persuasion occurs. For example, Calder, Insko, and Yandell (1974) presented prosecution and defense arguments in the context of a hypothetical trial and measured participants' idiosyncratic thoughts about the trial in addition to measuring attitudes. The authors came to the conclusion that beliefs regarding the defendant's guilt were derived from thoughts about the persuasive communication. This view then suggests that people react to the content of the arguments with positive or negative thoughts, and it is these thoughts that determine whether the target will support the position. Chaiken (1980) calls this type of processing systematic (Petty & Cacioppo, 1986, in their Elaboration Likelihood Model of persuasion conceptualization, ELM, call this the central route to persuasion).

This process, however, is not the only way that persuasion can occur. Sometimes, people are not motivated to process messages or unable to think about the messages but persuasion can still occur. In this case, people associate the attitude issue or object with positive or

negative cues. That is, they make inferences about the merits of the advocated position without considering the quality of the arguments that the message contains, but based on simple cues orthogonal to the message itself. Chaiken (1980) calls this type of processing heuristic (Petty & Cacioppo, 1986, call this the peripheral route to persuasion). Some cues that lead to enhanced persuasion are expert and likeable sources (Wood & Kallgren, 1988) and lengthy messages (Petty & Cacioppo, 1984). Of course, non-expert and dislikeable sources, and short messages lead to reduced persuasion.

Several factors have been identified that determine whether people will engage in systematic/central or heuristic/peripheral processing. One is a personality factor labeled 'need for cognition.' People who are high in need for cognition enjoy thinking and would, for example, rather solve crossword puzzles in their free time than watch TV. These are also people who chronically engage in systematic processing (through the central route; Cacioppo, Petty, & Morris, 1983). People who are low on need for cognition are more likely to respond to persuasive messages based on heuristic/peripheral cues. Another factor is personal involvement. If an issue has direct impact on people's lives they tend to process information relevant to that issue systematically (through the central route; Petty, Cacioppo, & Goldman, 1981). People who are not involved in the issues tend to process non-

systematically and respond to heuristic/peripheral cues. Yet, another factor is the affective state (mood) of the recipient of the persuasive message.

Affective States and Persuasion

Early conceptualizations of the effect of affective states on persuasion were based on stimulus-stimulus associations. For example, in one of the early demonstrations of the effect of mood on evaluation of a message, Razran (1940) gave participants either a free lunch (i.e., good mood manipulation) or exposed them to noxious odors (i.e., bad mood manipulation) and had them evaluate a sociopolitical message. Not surprisingly, the happy people reported more favorable attitudes toward the message than the unhappy people. The influence of mood was thought to stem from simple associations between the pleasant or unpleasant stimulus and the message.

Considerable current research has demonstrated that affective states influence persuasion by influencing processing strategy and judgmental accuracy rather than through stimulus-stimulus associations (e.g., Bless, Bohner, Schwarz, & Strack, 1990; Sinclair, 1988; Sinclair & Mark, 1992, 1995; Worth & Mackie, 1987). Worth and Mackie (1987) proposed that the effect of mood states on persuasion is not simply a direct transfer of affect but that mood state

mediates the cognitive processing of the persuasive message. More specifically, the authors proposed that participants in positive moods would be less likely to systematically process a persuasive communication than participants in neutral moods. To test this hypothesis, the authors had participants in different mood conditions listen to a persuasive message about acid rain containing strong arguments for half the participants and weak arguments for the reminder of the participants. Positive mood was induced by giving participants a dollar and letting them believe that they won it in a random draw. The neutral mood participants were simply asked whether they had ever participated in a lottery. The dependent measure was the difference between pretest and posttest attitudes toward acid rain. Participants in neutral moods were persuaded by strong arguments rather than by weak ones, but participants in positive moods did not react differentially to strong and weak arguments.

Worth and Mackie thus established that participants in positive moods engage in less systematic processing in persuasive situations, but left unanswered the question as to whether the processing deficit is due to motivational or cognitive factors. The authors suggested that the less systematic processing shown by participants in positive moods is due to reduced cognitive capacity brought about by the

nature of the affective state itself. A positive mood state may activate positive material stored in memory, which in turn activates other material to which it is linked, and as a result more material comes to mind than if a participant is in a neutral mood state (Isen, 1984). The presence of this material in working memory simply reduces space in a capacity-limited system. Consequently, participants in positive moods may wish to process incoming material systematically, but cannot do so because of a lack of capacity. If, however, they were given unlimited time to inspect the incoming material, the participants could compensate for their capacity deficit (i.e., show systematic processing) by taking more time to inspect the material. They addressed this issue in a subsequent study (Mackie & Worth, 1989).

To evaluate the capacity hypothesis, Mackie and Worth (1989) replicated their 1987 experiment (Worth & Mackie, 1987) with one change. For one half of the participants in the happy condition and for one half of the participants in the neutral mood condition, the amount of time of exposure to the material was self-selected. The happy participants with unlimited viewing time took more time than the neutral mood unlimited time participants to inspect the message and even more time when exposed to the strong arguments. These participants also showed all the usual indications of systematic processing: Their post-exposure attitudes reflected the differential

persuasive impact of strong versus weak messages and their performance on recall and cognitive response measures matched that of the neutral mood participants.

An alternative, motivational explanation suggests that participants act to maintain feelings of subjective well-being, preferring to expose themselves to positively rather than negatively toned material and to engage in behaviors that maintain rather than interfere with their positive mood. If extensive thinking about an issue is difficult, or if processing a message may result in exposure to aversive information, message recipients in positive moods might be motivated to avoid such processing in order to maintain their good mood. The participants are potentially able to systematically process incoming material--they simply are not motivated to do so.

Bless et al. (1990) explored this possibility. In their study, the relative impact of good and bad moods on recipients' processing of a persuasive communication, containing either strong or weak arguments, was assessed under conditions that either did or did not focus participants' attention on the content of the message. Participants in either positive or negative moods were exposed to a communication that presented either strong or weak arguments in favor of an increase in student services fees. However, half of the participants were also explicitly asked to pay attention to the quality of

the information provided. For the participants in the attention condition the good mood effect disappeared and they showed all the usual evidence of systematic processing.

Additional evidence suggests that moods only impact processing when they cannot be attributed to trivial external sources. For example, Sinclair, Mark, and Clore (1994) approached students on days with either pleasant (good mood) or unpleasant (sad mood) weather and presented them with either strong or weak arguments supporting the implementation of comprehensive examinations for graduating students. Some of the students were cued to the weather as a source of their mood and some were not. The uncued participants showed the typical mood-persuasion effect but the participants who were cued to the weather processed systematically regardless of their mood. The authors concluded that mood has an effect on processing only when participants believe that their mood informs them of some important quality of their environment. When the mood can be attributed to a trivial cause, the effect on processing vanishes.

I should point out that the mood/processing effect does not only appear in attitude change situations. For example, Sinclair (1988) demonstrated that happy people displayed more halo error and were less accurate on performance appraisals than sad people. And Sinclair and Mark (1995) showed that happy people were less accurate on

statistical judgments than were sad people. Cognitive response analyses demonstrated that these effects again occurred because of the differential processing strategies associated with happy versus sad moods.

Summary

The cognitive theories suggest that persuasion occurs as a result of generation of positively valenced thoughts in response to the persuasive message. If a person is motivated to attend to a message and the arguments in the message are cogent and issue-relevant, the message generates favorable thoughts and persuasion occurs. If the arguments in the message are trivial or irrelevant to the issue the message generates negative thoughts and counter-arguing. Consequently, attitude change does not occur in response to weak or flawed arguments.

ELM (Petty & Cacioppo, 1986) and the Heuristic/Systematic model of persuasion (Chaiken, 1980) posit the existence of an alternate process through which persuasion can occur: peripheral route and nonsystematic/heuristic route, respectively. One of the factors that determine whether people will engage in systematic (central route) processing or heuristic/nonsystematic (peripheral route) processing are affective states. Generally, happy moods lead to nonsystematic, less detail-oriented, and more heuristic processing,

whereas sad moods lead to more systematic, more detail-oriented, and less heuristic processing. In attitude change paradigms, this leads to comparable persuasion by both strong and weak arguments for happy participants, but leads to differential impact of strong versus weak arguments for sad/neutral participants. Potential causes of the effects of affective states on processing are discussed below.

Affect-as-Information

Schwarz and Clore (1983) posited the affect as information hypothesis as an explanation for the effects of mood state on perceptions of subjective well-being and life satisfaction. They argued that moods provide information about the status of one's life. That is, happy moods provide information that one's life is good whereas, sad moods provide information that one's life is not good. Schwarz and Clore induced happy or sad moods in participants and, for some of the participants, provided the opportunity for an external attribution for the cause of the mood (i.e., a strange room, in Study 1, or the weather, in Study 2). Happy participants, in all conditions, reported being happier than sad participants, in all conditions. However, a similar pattern of effects was apparent on measures of life satisfaction only for people who had no external attribution for their moods. The external attribution caused them to see their moods as uninformative and everyone in this condition reported moderate levels of life satisfaction.

This position was later extended to account for the differential processing effects of moods (i.e., the cognitive tuning extension of affect-as-information; see e.g., Clore, Schwarz, & Conway, 1994; Schwarz, 1990; Sinclair & Mark, 1992; Sinclair et al., 1994).

Cognitive Tuning

One explanation for these differential processing strategy effects is the cognitive tuning extension of the affect-as-information hypothesis. This position was originally explicated by Schwarz (1990). He reviewed literature suggesting that situational cues can convey information about the processing requirements necessary for judgments, and that these cues affect the degree to which people will attend to information. Drawing on work by Easterbrook (1959) and Wegner and Vallacher (1986), Schwarz made the case that processing requirements can be conveyed by various cues. The cues can be rather blatant (Schwarz, 1990; e.g., Wegner & Vallacher's finding that failures to obtain desired outcomes lead to more attention to detail than do successful outcomes; Bruner & Goodman's, 1947, finding that the greater social value of a stimulus, the greater the attention devoted to it) or, as I argue, more subtle (e.g., Bruner & Postman's, 1947, findings of increased attention to emotionally charged words; see also Bruner, 1957, on perceptual readiness; Colcombe, Isbell, & Clore, 2001; Soldat, Sinclair, & Mark, 1997). Furthermore, it is argued that

internal cues, like affective states, can have similar effects (Schwarz, 1990; Sinclair, 1988; Sinclair & Mark, 1992).

The position was extended by Clore et al. (1994), Ottati, Terkildsen, and Hubbard (1997), Sinclair et al. (1994), and Soldat et al. (1997). According to this hypothesis, affective states provide informational signals about situations and the conduct of tasks. Happy moods signal that situations are benign and that no extra cognitive resources are necessary for processing and judgment, whereas sad moods signal that situations are threatening or important, and that detailed processing is necessary (see Sinclair et al., 1994, for empirical evidence supporting this position).

Are Moods Necessary for Mood Effects?

Recently, Soldat et al. (1997) extended the cognitive tuning branch of the affect-as-information hypothesis to external affective cues (i.e., color) that do not directly influence perceivers' moods. In particular, they argued that colors can serve as external affective cues, thereby signaling the degree of processing required in a particular situation. For example, in Soldat et al., although the colors red or blue had no actual impact on mood, the color red conveyed positive affect and blue conveyed negative affect. Furthermore, mood-like effects on processing were observed in the positive- vs. negative-conveyed-affect conditions (i.e., the positive cue led to nonsystematic processing while

negative cue led to systematic processing). This pattern of effects emerged in a study in which participants rated their current affective state or the affect conveyed by the paper after solving problems on the colored paper for about 15 minutes. That is, Soldat et al. demonstrated that participants were most accurate when solving GRE-like problems on blue paper relative to red or white. However, paper color did not influence reported affective state (cf. Jacobs & Blandino, 1992; Jacobs & Suess, 1975) but did influence ratings of the affect conveyed by the paper. An additional study replicated this effect and demonstrated that white fell between red and blue on the measure of conveyed affect (again, no effects emerged on affective states; see Soldat et al., 1997).

Soldat et al. (1997) conducted another study in which a group of participants completed both simple and complex Graduate Record Exam-like questions, involving analytic problem solving, on either red or blue paper and evaluated their current affective states and the difficulty of reading the materials. Blue paper led to greater accuracy, especially for complex questions. However, paper color did not influence mood or readability. Furthermore, analyses of covariance controlling for arousal (as reported on the arousal component of the measure of current affective state) demonstrated no effects of arousal. Finally, Sinclair, Soldat, and Mark (1998) demonstrated the color effect

in the context of an introductory psychology examination: Participants who received the blue exam outperformed participants who received the red exam; however, the effect was more profound for complex questions.

Soldat et al. proposed that colors can affect processing strategy, and that the effects of color can be explained by extending the cognitive tuning branch of the affect-as-information hypothesis (Clore et al., 1994; Schwarz, 1990; Sinclair et al., 1994) from experienced affect to external affective signals, such as color. According to the cognitive tuning extension of the affect-as-information hypothesis, affective states can influence cognitive processing strategy by providing feedback about the nature of situations (Sinclair et al., 1994). Thus, Soldat et al. (1997) argued that positive affective cues signal that a situation is benign and that a processing strategy that conserves cognitive resources (i.e., heuristic/nonsystematic processing) is adequate to meet processing goals. Affective cues that are neutral or more negative than usual signal that a person is in a situation where a heuristic/nonsystematic processing strategy is not adequate for dealing with the environment adaptively. As a result, positive affective cues can lead to heuristic/nonsystematic processing whereas negative and neutral affective cues generally lead to more systematic, detail-oriented processing (Sinclair, 1988; Sinclair & Mark, 1992; cf. Sinclair,

Mark, Soldat, Lavis, & Moore, 2000). Thus, moods may not be necessary for mood-like effects.

Other researchers have also found evidence of external affective cues impacting processing without affecting mood. For example, Ottati et al. (1997) had participants view a videotape of a person who expressed verbal statements while displaying neutral, happy, or angry facial expressions. These statements could be used to quickly stereotype the person (heuristic processing). Alternatively, these statements could be processed in a piecemeal manner for purposes of judging the person (systematic processing). Among low-motivation participants, neutral facial expressions elicited systematic processing, whereas happy facial expressions elicited heuristic processing. Angry facial expressions elicited a processing style falling between these extremes (the anger effect could be arousal-based, see, e.g., Bodenhausen, Sheppard, & Kramer, 1994). Highly motivated participants processed the verbal statements in a systematic manner regardless of the target's facial expression. These results correspond to findings reported in the mood literature (e.g., Bodenhausen, Kramer, & Suesser, 1994, who found that positive affective states lead to stereotyping), and the differences obtained for low- and high-motivation participants support a cognitive tuning account of the

mediating process (see Soldat et al., 1997). Analogous to Soldat et al.'s results, no changes in experienced affect were found.

Cognitive Tuning, Subtle External Affective Cues, and Responses to Persuasive Communications

Given Soldat et al.'s (1997) finding of an increase in accuracy for participants exposed to the negative external affective cue and Ottati et al.'s finding of an increase in reliance on stereotypes during encoding of information delivered by a smiling person, I hypothesized that if participants were exposed to strong or weak persuasive messages in the presence of affectively-laden external cues (e.g., colors, facial expressions), the degree of processing of the message, and in turn, the relative impact of strong and weak arguments would be influenced by the valence of the cue. Three studies tested this hypothesis. In the first study, participants were randomly assigned to reading strong or weak arguments on either red or blue paper. Attitudes were measured. I expected that blue paper would lead to a greater effect of argument strength on attitudes relative to red paper. In the second study, participants gave impromptu speeches based on strong or weak arguments to a confederate who responded in either a positive or serious manner (cf. Butler & Baumeister, 1998). Attitudes were measured. I expected the affective cue from the confederate to signal processing requirements such that participants would attend to the

arguments to the greatest extent in the serious condition; here, we would find the greatest effect of argument strength. In the third study, participants read the arguments used in Studies 1 and 2 on a computer screen while photographs of smiling or frowning faces were presented on the screen below threshold of awareness. I expected the results of Studies 1 and 2 to be conceptually replicated in that participants would again attend to argument strength only in the presence of a negative cue.

Thus, there were multiple purposes of the present set of studies. First, I wanted to assess whether my work addressing external affective cues extends to the area of responses to persuasive appeals (Study 1; cf. problem solving in Soldat et al., 1997). Second, I wanted to address whether other external affect cues lead to similar effects (Studies 2 and 3; cf. color effects in Soldat et al., 1997, and Study 1). Third, I wanted to provide direct evidence that the effects are, in fact, based on differential detail-oriented processing, associated with positive versus negative cues, by addressing cognitive responses and information retrieval (Study 3; cf. Soldat et al., 1997 and Studies 1 and 2 where detail-oriented processing was inferred based on the pattern of results). Finally, I wanted to address whether the effects can occur when the cues are presented at a level that is out of awareness

(Study 3; cf. Soldat et al., 1997 and Studies 1 and 2, where the cues were presented in awareness).

Implications of the Predictions in Terms of Other Models

These predictions have some important implications for models of the effects of affective states on judgmental processes, in terms of cues that can affect responses to persuasive communications, and in terms of the role of situational cues that can signal processing requirements. For example, the predicted effects would call into question cognitive capacity explanations of the effects of mood on judgment (see, e.g., Mackie & Worth, 1989). This explanation suggests that happy moods bring more information and more diverse information to mind which, in turn, restricts cognitive capacity and forces people to rely on heuristics for judgment. It does not seem plausible to suggest that a positive cue, such as color or facial expressions (especially if presented out of awareness), would bring to mind more information.

Furthermore, my predictions seem inconsistent with stop-rule explanations of mood effects (Martin, Ward, Achee, & Wyer, 1993) that might suggest that the positive cues (conveyed by, e.g., red paper or favorable audience response) would cause people to ask themselves whether they were enjoying the task, leading them to continue to process, whereas the relatively more negative affective cues (conveyed

by, e.g., blue paper or serious audience response) would cause people to stop processing. Thus, I would expect that the stop-rule predictions would be exactly opposite in direction to my predictions. Of course, both the cognitive capacity and stop rule explanations implicate changes in affective states, whereas my explanation applies whether affective states are implicated or not. I believe that it is more parsimonious to posit a single mediator (i.e., cognitive tuning) that can apply more universally, rather than positing multiple mediators that apply in more restricted circumstances.

Interestingly, my predictions have other implications. Consider recent work by Butler and Baumeister (1998) who found that supportive audiences caused performance decrements in participants. Butler and Baumeister suggest that the effects were due to supportive audiences eliciting cautious, protective strategies, leading participants to engage in futile caution. I argue that the performance decrements can be more parsimoniously explained in light of my predictions: Supportive audiences elicit nonsystematic processing that leads to performance decrements.

I believe that the predicted pattern of effects in my three studies have implications in other domains as well (e.g., ELM/HSM models of persuasion [Petty & Cacioppo, 1986/Chaiken, 1980], hedonic contingency [Wegener & Petty, 1994], mood maintenance/affect repair

[see, e.g., Sinclair & Mark, 1992], etc). For example, I expect that cues that would normally be considered peripheral and orthogonal to message quality can, in fact, affect degree of elaboration. I will return to these issues in the general discussion.

Chapter 2

STUDY 1

Pilot Study

A pilot study was conducted in order to assess my basic assumption about the affect conveyed by the red and blue paper. Sixty-four participants were randomly assigned to a red paper or a blue paper condition and evaluated the affective states conveyed by the paper. They were handed questionnaires, printed on either paper color, asking them to "Please indicate the feeling state conveyed by the color of this paper by circling the appropriate number on each of the scales listed below." The 7-point Likert scales, anchored at 1 and 7, were: (a) extremely bad-- extremely good, (b) extremely passive--extremely active, (c) extremely negative--extremely positive, and (d) extremely tired--extremely activated. The mean of the items was used as a measure of conveyed affect. These items formed an internally consistent scale (Cronbach's alpha = .83). An analysis of variance (ANOVA) on the conveyed affect scale revealed a main effect for Color, $F(1, 62) = 7.91$, $p < .01$ ($M = 5.05$ and $M = 4.31$ for the red and blue conditions, respectively). Additional analyses showed that while the red paper conveyed significantly more positive affect than the midpoint of the scale, $t(32) = 6.01$, $p < .01$, the blue paper did not, $t(30) = 1.53$, ns. This finding indicates that the red color conveyed positive affect, while the blue color conveyed relatively more negative affect. I should

point out that conveyed affect is not the same as affective state. That is, stimuli can convey positive or negative affect, yet have no impact on the perceiver's mood. For example, people can accurately identify the emotions conveyed by facial expressions in photographs (see, e.g., Ekman & Friesen, 1986); however, I doubt that the photographs would affect the perceivers' moods (see Ottati et al., 1997).

The results of the pilot study show that different colors convey different affective qualities. Given that experienced feeling states can inform people about the nature of a situation and its associated processing requirements (cognitive tuning), it seems plausible that environmental affective cues may serve a similar function and inform people about the nature of a situation (e.g., benign or problematic) and thus directly elicit processing strategy differences without affecting the perceiver's mood. The red color, because of its association with happiness, would thus be more likely to promote heuristic/nonsystematic processing than the blue color. Consequently, participants who are exposed to persuasive arguments on red paper would be more inclined to use heuristics and process nonsystematically than participants who are exposed to the same arguments on blue paper. Considering that persuasion by strong arguments and rejection of weak arguments is generally considered to be the result of central or systematic processing and that little

differentiation between strong and weak arguments is considered to be the result of peripheral or heuristic processing (Chaiken, 1980; Petty & Cacioppo, 1986), this is the pattern that I expected to find in my first study.

Study 1

Participants were exposed to a set of strong or weak arguments supporting comprehensive examinations for graduating students (Petty & Cacioppo, 1984) printed on either red (positively valenced external affective cue) or blue (negatively valenced external affective cue) paper. The blue paper participants were expected to elaborate the arguments and be persuaded by strong arguments only, while the red paper participants were not expected to elaborate, and consequently be persuaded to the same extent by both strong and weak arguments. Given that I do not believe that the effect is mediated by mood I expected no differences in mood between the groups.

Method

Participants

Participants were 87 introductory psychology students at the University of Alberta. All were volunteers who participated in order to fulfill partially a course requirement.

Procedure

A copy of the experimental script is presented in Appendix A. Participants arrived at a laboratory in groups and were randomly assigned to either red or blue paper color condition. They were asked to read and sign a consent form indicating that they were participating in a study designed to assess the effect of a sample of a person's writing on impression formation (the consent form is presented in Appendix B). They were told that different person's writing samples were coded by different colors of paper to facilitate sorting of the data. The mock writing sample contained nine strong or weak arguments supporting the implementation of comprehensive exams for graduating students (Petty & Cacciopo, 1984). These arguments are presented in Appendix C. Appended to the arguments was a page stating: 'Your own attitudes toward the issue of comprehensive exams might influence your impression of the writer. In order to statistically control for this, please answer the following questions:' Participants were asked to circle numbers on 9-point scales anchored at 1 and 9. The items were (a) The idea of comprehensive exams is: very bad--very good, (b) very harmful--very beneficial, (c) very foolish--very wise, and (d) not at all favorable--very favorable. A copy of the attitude measure is presented in Appendix D.

The last page of the booklet contained the Present Mood State Inventory. Participants were led to believe that their moods might affect their impressions and, as an apparent statistical control, participants were asked to circle the numbers on 5-point scales that describe how they felt "right now, today." The items, anchored at 1 strongly disagree and 5 strongly agree, were (a) very bad, (b) very sedate, (c) very good, (d) very aroused, (e) very negative, (f) very active, (g) very positive, (h) very passive, (i) very alert, (j) very happy, (k) very sad, (l) very tired, (m) very miserable, (n) very quiet, (o) very activated, (p) very glad, (q) very inactive, (r) very unhappy, (s) very pleased, and (t) very stimulated. A copy of the mood measure is presented in Appendix E. Following completion of the task, suspicion was assessed through a written funnel-type suspiciousness probe (Page, 1975). The participants were debriefed and thanked for participation. A copy of the debriefing is presented in Appendix F. No participants were hypothesis suspicious.

Results

Attitude Ratings

The attitude items were coded such that high scores (9) indicated favorable attitudes toward comprehensive examinations. An internal consistency analysis indicated that the four items formed a reliable scale (Cronbach's alpha = .97). The mean of these items

formed a measure of attitudes toward comprehensive final examination and served as the dependent variable in a single planned orthogonal contrast. The contrast weights were 1, -1, 2, -2 for the strong argument red, weak argument red, strong argument blue, and weak argument blue conditions, respectively. These weights correspond to a pattern of effects where strong arguments lead to greater degree of elaboration on blue paper than on red paper.

The predicted pattern of effects was significant, $F(1, 82) = 21.32$, $p < .0001$. Participants in the blue paper condition showed attitude change in the direction of the message when the arguments were strong ($M = 6.32$) but not when the arguments were weak ($M = 4.02$). Red paper participants showed comparable attitude change in response to both strong ($M = 6.26$) and weak ($M = 5.42$) arguments. Additional orthogonal contrasts, within color condition (weights +1 –1 for the strong and weak conditions, respectively) showed that the effect of argument strength was nonsignificant in the red condition, $F(1, 82) = 2.82$, ns, but significant in the blue condition, $F(1, 82) = 18.61$, $p < .0001$.

Mood

The mood items were coded such that high scores (5) indicate positive mood and items (a), (b), (e), (h), (k-n), (q), and (r) were reverse scored. An internal consistency analysis indicated that the twenty

items formed a reliable scale (Cronbach's alpha = .93). The mean of these items formed a measure of participants' mood. A oneway ANOVA indicated that participants in the positive cue condition (M = 3.24) did not experience more positive moods than did participants in the negative cue condition (M = 3.31), F(1, 84) = .24, ns.

Discussion

The results show that the blue paper participants elaborated the arguments and were persuaded by strong arguments only, whereas the red paper participants did not elaborate and were persuaded to the same extent by both strong and weak arguments. These mood-like effects occurred without any differences in experienced affect as a function of paper color. The results provide evidence that the effects reported by Soldat et al. (1997) generalize to persuasive situations. Negative external affective cues (i.e., the blue color) indicate that situations require detail-oriented processing and, as a result, participants attend to argument strength. Positive affective cues (i.e., the red color) indicate that situations are benign and participants do not attend to argument strength. No change in reported affective state indicates that these effects are caused by the external affective cue directly rather than being mediated by experienced affective states. Whereas, I have support for my position, I decided that it would be prudent to attempt to replicate the effect in the context of another

external affective cue (i.e., audience facial expression). This was the purpose of Study 2.

Chapter 3

STUDY 2

Pilot Study

In order to make the presentation of arguments less time consuming for the participants, it was necessary to select a subset of 5 strongest and 5 weakest arguments from the set of 9 used in Study 1. Seven participants read all 9 arguments in random orders and rated their persuasiveness on a 15-point scale anchored at 1—not at all persuasive and 15—extremely persuasive. The 5 most persuasive arguments were used as strong arguments ($\underline{M}$ = 12.14, $\underline{M}$ = 11.57, $\underline{M}$ = 12.57, $\underline{M}$ = 9.71, $\underline{M}$ = 11.57) and the 5 least persuasive arguments were used as weak arguments ($\underline{M}$ = 2.38, $\underline{M}$ = 1.00, $\underline{M}$ = 2.13, $\underline{M}$ = 2.13, $\underline{M}$ = 2.13). Strong arguments were perceived as more persuasive than weak arguments, $\underline{t}(6) = 23.95$, $\underline{p} < .0001$.

Study 2

Under the guise of a study addressing impromptu speeches, participants read aloud strong or weak arguments advocating the institution of comprehensive examinations for graduating students (Petty & Cacioppo, 1984) to an audience who responded either favorably (i.e., smiled; positively valenced cue) or with a serious facial expression (i.e., somber expression; negatively valenced cue). As in Study 1, participants in the negative cue (i.e., serious audience response) condition were expected to elaborate the arguments and be

persuaded by strong arguments only, whereas participants in the positive cue (i.e., favorable audience response) condition were expected to be unaffected by argument strength. Audience's facial expression was not expected to have any effect on participants' affective states.

Method

Participants

Participants were 60 introductory social psychology students at the University of Alberta. All were volunteers who participated in order to fulfill partially a course requirement.

Procedure

A copy of the experimental script is presented in Appendix G. Participants arrived at the laboratory individually; however, a person who the participants believed to be a second participant but who was, in fact, a confederate of the experimenter arrived at the same time. Both people read and signed the consent forms that are presented in Appendix H. Both were told that the study addressed impromptu speeches. A rigged, but apparently random, draw determined that the real participants would read aloud five strong or weak arguments advocating instituting comprehensive examinations for graduating students to the confederates who responded either favorably (i.e., a smiling, agreeable expression; positively valenced external affective cue) or with a serious facial expression (i.e., a somber, critical,

frowning expression; negatively valenced external affective cue). The arguments were randomly selected, for each participant, from the Petty & Cacioppo (1984) arguments. The arguments are presented in Appendix I.

Following the speech, in order to maintain the cover story, the participants completed a short questionnaire addressing their perception of their performance. A copy of this measure is presented in Appendix J. Two items from this scale served as a manipulation check. The items, anchored at 1 and 7, were (a) the audience member appeared to be: extremely cold--extremely warm, (b) extremely sad--extremely happy. An additional two items served as a mood measure. The items, anchored at 1 and 7, were (a) during the presentation, I felt: extremely bad--extremely good, (b) extremely sad--extremely happy. Following completion of this questionnaire, the experimenter told the participants: 'Your own attitudes toward the issue of comprehensive exams might influence your perception of your speech. In order to statistically control for this, please answer the questions in this questionnaire.' Participants were then presented with the attitudes questionnaire from Study 1. The remainder of the session was identical to that of Study 1. A copy of the attitude measure is presented in Appendix K. A copy of the debriefing is presented in Appendix L. No participants were hypothesis suspicious.

Results

Manipulation Check

The audience member perception items were coded such that high scores (7) indicated warmth and happiness. An internal consistency analysis indicated that the two items formed a reliable scale (Cronbach's alpha = .86). The mean of these items formed a measure of audience perception. A oneway ANOVA indicated that participants in the favorable audience condition perceived the audience as warmer and happier (M = 5.60) than did participants in the serious facial expression audience condition (M = 4.63), $F(1, 58)$ = 18.00, p <.0001.

Attitude Ratings

The attitude items were again coded such that high scores (9) indicated favorable attitudes toward comprehensive examinations. An internal consistency analysis indicated that the four items formed a reliable scale (Cronbach's alpha = .97). The mean of these items formed a measure of attitudes toward comprehensive final examination and served as the dependent variable in a single planned orthogonal contrast. The contrast weights were 1, -1, 2, -2 for the strong argument smile, weak argument smile, strong argument serious expression, and weak argument serious expression conditions, respectively. These weights correspond to a pattern of effects where

strong arguments lead to greater degree of elaboration in the presence of audience with a serious facial expression than in the presence of audience with a smiling facial expression. The predicted pattern of effects was significant, $F(1, 56) = 5.13$, $p < .03$. Participants in the presence of the serious audience showed attitude change in the direction of the message when the arguments were strong ($M = 6.42$) but not when the arguments were weak ($M = 4.95$). Participants in the presence of the smiling audience showed comparable attitude change in response to both strong ($M = 6.13$) and weak ($M = 5.71$) arguments. Additional orthogonal contrasts, within audience response condition (weights +1 –1 for the strong and weak conditions, respectively) showed that the effect of argument strength was nonsignificant in the smiling condition, $F(1, 56) = 0.40$, ns, but significant in the serious condition, $F(1, 56) = 4.92$, $p < .02$.

Mood

The mood items were coded such that high scores (7) indicate positive mood. An internal consistency analysis indicated that the two items formed a reliable scale (Cronbach's alpha = .76). The mean of these items formed a measure of participants' mood. A oneway ANOVA indicated that participants in the favorable audience condition ($M =$ 4.42) did not experience more positive moods than did participants in

the serious facial expression audience condition (M = 4.55), F(1, 58) = .40, ns.

Discussion

The results show that the participants giving the speech to a serious audience elaborated the arguments and were persuaded by strong arguments only, whereas the participants speaking to the smiling audience did not elaborate and were persuaded to the same extent by both strong and weak arguments. As in Study 1, no differences in mood were observed. The results provide evidence that the effects from Study 1 generalize to other external affective cues (i.e., audience response). Negative external affective cues (i.e., serious audience) indicate that situation requires detail-oriented processing and, as a result, participants attend to argument strength. Positive external affective cues (i.e., favorable audience) indicate that situation is benign and participants do not attend to argument strength. Again, the fact that I found no change in mood indicates that experienced affect is not the mediator of the effect.

The results of this study also have implications in terms of work done by Butler and Baumeister (1998) who found that supportive audiences were associated with performance decrements. While Butler and Baumeister suggested that performance decrements were observed because supportive audiences elicit cautious, protective

strategies, and participants engage in futile caution, I would argue that the performance decrements can be more parsimoniously explained in light of my results; that is, supportive audiences elicit nonsystematic processing that lead to performance decrements (for evidence of performance decrements associated with nonsystematic processing, see, e.g., Sinclair, 1988; Sinclair & Mark, 1995; Soldat et al., 1997). Future research should assess this issue directly (cf. Petty, 1999).

The results of both studies suggest that external affective cues (i.e., paper color, facial expressions) affect processing and judgment in a manner similar to mood states. However, cognitive responses typically used to assess elaboration were not measured in either study. Study 3 addressed this issue and extended the effects of external affective cues on elaboration and persuasion to affective cues presented out of awareness.

Chapter 4

STUDY 3

The results of both studies suggest that external affective cues (i.e., paper color, facial expressions) affect processing and judgment in a manner similar to mood states. However, cognitive responses typically used to assess elaboration were not measured in either study. Furthermore, differential processing was inferred based on the pattern of results in Soldat et al. (1997) and in Studies 1 and 2. Study 3 addressed this issue and extended the effects of external affective cues on elaboration and persuasion to affective cues presented out of awareness. Results consistent with the patterns of Studies 1 and 2 would support my contention that external affective cues affect degree of processing. Furthermore, they would suggest that these effects occur when the cues are processed automatically and are presented out of awareness. Finally, a consistent pattern of results would call a cognitive capacity explication of my effects into question because the cues were being processed automatically and there is no reason to believe that automatic processing of the cues affects capacity.

Pilot Study

In order to select photographs that could serve as affective cues 28 participants were asked to circle the numbers on 7-point scales that describe their response to the photographs. The items, anchored at 1 strongly disagree and 5 strongly agree, were (a) the photograph is

happy and (b) the photograph is sad. Item (b) was reverse scored and mean of the two items was computed. The happy photograph was rated as happier than the sad photograph (M = 6.77 and M = 2.45, respectively), $F(1, 27) = 385.67$, $p < .0001$.

Study 3

Under the guise of a study addressing impression formation, participants read strong or weak arguments advocating the institution of comprehensive examinations for graduating students (Petty & Cacioppo, 1984) on a computer screen. Between the arguments a picture of a face (see, e.g., Ekman & Friesen, 1986) with either smiling (i.e., positively valenced cue) or with a serious facial expression (i.e., negatively valenced cue) was briefly presented below threshold of awareness. As in Studies 1 and 2, participants in the serious cue condition were expected to elaborate the arguments and be persuaded by strong arguments only, whereas participants in the positive cue condition were expected to be unaffected by argument strength.

Method

Participants

Participants were 55 introductory psychology students at the University of Alberta. All were volunteers who participated in order to fulfill partially a course requirement.

Procedure

A copy of the experimental script is presented in Appendix M. Participants arrived at a laboratory in groups of 1 to 5 and were randomly assigned to either smiling face or serious face conditions. They were asked to read and sign a consent form asking them to participate in a study designed to assess the effect of a sample of a person's writing on impression formation. A copy of the consent form is presented in Appendix N. The mock writing sample contained nine strong or weak arguments advocating the implementation of comprehensive exams for graduating students (Petty & Cacciopo, 1984) and was presented in random order on a computer screen. Each of the nine arguments appeared separately and participants were asked to 'press the space bar to advance to the next page.' Before the next argument appeared on the screen, a 4.11 x 3.13 inch color photograph was presented for the duration of a single refresh of the screen (13.3 ms; see, e.g., Draine & Greenwald, 1998). The following refresh of the screen masked the image with the next argument that remained on the screen until the participant pressed the space bar again. Each participant was thus exposed to the positive or negative cue nine times during the experimental session. After the last argument appeared, participants were asked to inform the experimenter that they were finished. Under the guise of statistical

control participants were asked to complete the attitude items from Studies 1 and 2. Participants were then asked to complete thought listing. They were asked to 'please list any and all thoughts you had while reading the speech addressing the institution of comprehensive final exams. These can include anything related to the arguments presented, the topic of comprehensive final exams, the context in which the speech was given, or anything else that you might have been thinking, including totally unrelated things. You may use the back of the page if necessary. Please separate each thought by drawing a line across the entire page under each thought.' After completing the thought listings, participants were asked to indicate by + signs when thought was favorable toward comprehensive examinations, - signs when thought was unfavorable, and 0's when thought was neutral. Finally, participants were asked, on a separate page, to recall in as much detail as possible, all of the arguments. A copy of the entire questionnaire is presented in Appendix O.

Following completion of the questionnaire, suspicion was assessed through a written funnel-type suspiciousness probe (Page, 1975). The participants were debriefed and thanked for participation. A copy of the debriefing is presented in Appendix P. No participants were hypothesis suspicious. Participants were also asked whether they

could identify anything that was presented between arguments. No participants did so.

Results

Attitude Ratings

The attitude items were coded such that high scores (9) indicated favorable attitudes toward comprehensive examinations. An internal consistency analysis indicated that the four items formed a reliable scale (Cronbach's alpha = .96). The mean of these items formed a measure of attitudes toward comprehensive final examination and served as the dependent variable in a single planned orthogonal contrast. The contrast weights were 1, -1, 2, -2 for the strong argument smile, weak argument smile, strong argument serious expression, and weak argument serious expression conditions, respectively. These weights correspond to a pattern of effects where strong arguments lead to greater degree of elaboration upon exposure to a photograph with a serious facial expression than upon exposure to a photograph with a smiling facial expression. The predicted pattern of effects was significant, $F(1, 51) = 9.46$, $p < .003$. Participants in the serious cue condition showed attitude change in the direction of the message when the arguments were strong ($M = 6.63$) but not when the arguments were weak ($M = 5.08$). Positive cue participants showed comparable attitude change in response to both strong ($M = 5.97$) and

weak (M = 4.93) arguments. Additional orthogonal contrasts, within cue condition (weights +1 –1 for the strong and weak arguments, respectively) showed that the effect of argument strength was nonsignificant in the positive cue condition, F(1, 51) = 1.76, ns, but significant in the serious cue condition, F(1, 51) = 8.04, p < .007.

Thought Listings

A single index of thoughts toward comprehensive exams was formed by subtracting the number of negative thoughts from the number of positive thoughts. This measure served as the dependent variable in a single planned orthogonal contrast. The contrast weights were 1, -1, 2, -2 for the strong argument smile, weak argument smile, strong argument serious expression, and weak argument serious expression conditions, respectively. These weights correspond to a pattern of effects where strong arguments lead to greater degree of elaboration upon exposure to a photograph with a serious facial expression than upon exposure to a photograph with a smiling facial expression. Again, the predicted pattern of effects was significant, F(1, 51) = 9.59, p < .003. Participants in the serious cue condition reported more positive than negative thoughts toward comprehensive exams when the arguments were strong (M = 0.95) than when the arguments were weak (M = -1.39). Positive cue participants did not produce different patterns of thoughts as a function of argument strength (M =

-0.63 and M = -1.90 for strong and weak arguments, respectively). Additional orthogonal contrasts, within facial expression condition (weights +1 –1 for the strong and weak conditions, respectively) showed that the effect of argument strength was nonsignificant in the positive cue condition, F(1, 51) = 1.29, ns, but significant in the serious cue condition, F(1, 51) = 9.00, p < .004. Thus, consistent with elaboration, negative cue participants generated different patterns of thoughts as a function of argument strength, whereas, consistent with heuristic processing and lack of elaboration, positive cue participants did not.

Recall of Arguments

A judge counted the number of arguments recalled by participants. A second judge independently counted a subset (n = 16) of the arguments in a different random order. The interjudge reliability was 1.00. The counts were subjected to a 2 (facial expression) x 2 (argument strength) ANOVA.[1] Of course, we would expect that elaboration would lead people in the sad facial expression condition to recall more arguments than people in the happy facial expression condition. This was the case (M = 3.86 and M = 3.11 for the sad and happy conditions, respectively), F(1, 49) = 3.02, p < .05. No other effects approached significance.

Discussion

The results show that the participants exposed to the negative cue elaborated the arguments and were persuaded by strong arguments only, whereas the participants exposed to the positive cue did not elaborate and were persuaded to the same extent by both strong and weak arguments. This effect was similar to those reported in Studies 1 and 2. However, in the present study, the affective cues were presented out of awareness. The results provide evidence that the facial expression effects from Study 2 generalize to photographs of facial expressions, at least when these are presented out of awareness. The results are also consistent with results of Study 1 where a trivial feature of a situation (i.e., a color of paper) cued participants to whether they should or should not engage in systematic processing. Study 3 suggests that participants need not be aware of the cue in order for the cue to have impact on processing. The information that there is a need to process appears capable of impacting processing even if the source of the cue appears to be inaccessible to the participants (see, e.g., Clore & Colcombe , 2001). Participants in Study 1 may not have realized that it was the color of the paper that was leading them to engage in systematic or nonsystematic processing. Instead, participants may have responded to the color cue without a causal attribution for the source of the signal. I believe that if

participants were made consciously aware that the color of paper could act as a signal for processing, I would have found no effects (see Sinclair et al., 1994). This, of course, would parallel findings in the mood literature where it was shown that when participants are made aware of a trivial nature of the cause of their mood, mood effects are attenuated (e.g., mood was attributed to the weather in Sinclair et al., 1994). In the present study, the negative valence of the serious facial expression photograph was perceived without conscious perception of the photograph itself and the affective information still led to differential processing and, as a result, participants attended to argument strength when exposed to the negative cue. The positive cue (i.e., smiling person photograph) led to a failure to attend to the arguments.

Finally, I should point out that outcome of Study 3 is consistent with results of Colcombe et al. (2001) who found that participants who were unconsciously exposed to "smiley face" drawings engaged in stereotyping (i.e., reliance on expectations), whereas participants who were unconsciously exposed to "frowny face" drawings engaged in a piecemeal approach to information processing (i.e., reliance on behaviors).

Chapter 5

GENERAL DISCUSSION

Summary of the Results

The results of Study 1 showed that the Soldat et al. (1997) effects of external affective cues on judgment generalize to the area of persuasion. The participants for whom arguments in favor of implementing comprehensive examinations for graduating students were printed on blue paper presumably elaborated the arguments and were persuaded by strong arguments only, whereas participants for whom the arguments were printed on red paper presumably did not elaborate and were persuaded to the same extent by both strong and weak arguments. This outcome mirrors findings that have been reported in countless studies involving mood inductions (e.g., Bless et al, 1990; Mackie & Worth, 1989; Sinclair et al., 1994). However, the mood-like effects in Study 1 occurred without any differences in experienced affect as a function of paper color.

Study 2 employed a different conceptualization of an external affective cue, audience response, and demonstrated that the Soldat et al. (1997) effects and the effects of Study 1 generalize to a different affective cue. The results of Study 1 were conceptually replicated. The results of Study 2 showed that audience response can serve as a cue that presumably enhances or reduces elaboration in participants giving speeches. People facing a serious audience appeared to

elaborate the arguments and were persuaded by strong arguments only, whereas the people speaking to the smiling audience appeared to fail to elaborate and were persuaded to the same extent by both strong and weak arguments. As in Study 1, no differences in mood were observed.

Finally, the results of Study 3 showed that facial expressions of people in photographs presented out of awareness can also influence elaboration of persuasive arguments. The participants exposed to the negative cue (i.e., photograph of a person with serious facial expression) appeared to elaborate the arguments and were persuaded by strong arguments only, whereas the participants exposed to the positive cue (i.e., a photograph of a smiling person) did not appear to elaborate and were persuaded to the same extent by both strong and weak arguments. Study 3 also provided evidence that the Soldat et al. (1997) result and the results of Studies 1 and 2 were a result of differential processing strategies/differential elaboration. Cognitive response analyses indicated that participants exposed to the negative cue elaborated the arguments and recalled more arguments relative to participants in the positive cue condition.

Implications of the Results of Studies 1, 2, and 3

Taken together, the results of the three studies provide evidence that the effects reported by Soldat et al. (1997) generalize to persuasive

situations. Negative external affective cues (i.e., the blue color and a serious facial expression) result in detail-oriented processing and, as a result, participants attend to argument strength. Positive affective cues (i.e., the red color and a smiling face) result in less detail-oriented processing and participants do not attend to argument strength. No changes in reported affective states were apparent as a function of cue valence. Indeed, this suggests that these effects are caused by the external affective cue directly rather than being mediated by experienced affective states: Again, moods do not need to be implicated in mood-like effects.

Study 3 further shows how affective cues with trivial causes (mood influenced by the weather, Sinclair et al., 1994; color of paper, Soldat et al., 1997) can exert influence over whether participants do or do not engage in systematic processing. Study 3 suggests that participants need not be aware of the cue in order for the cue to have impact on processing. Consequently, participants may not always make causal attributions for engaging systematic or nonsystematic processing. That is, it may be that the process through which the cues (internal or external) function may be automatic and, as a consequence, trivial features of situations or moods with trivial causes can influence processing of information in important ways.

Implications for Other Models

The results appear inconsistent with an extension of the Martin et al. (1993) stop-rule explication of mood-related processing effects to affective cues because, I believe, the stop rule position would predict that participants exposed to the positively valenced cues would continue to process, whereas those exposed to the negatively valenced cues would stop processing. Furthermore, Study 3 appears inconsistent with an extension of the capacity explanation of mood effects to affective cues (see Mackie & Worth, 1989; Worth & Mackie, 1987). In Study 3, the affective cue manipulation occurred automatically and out of awareness; thus, there is little reason to believe that capacity was affected. Finally, the results would appear inconsistent with the hedonic contingency model as well (Wegener & Petty, 1994) because hedonic contingency (and likely mood maintenance/affect repair models; see, e.g., Sinclair & Mark, 1992) would suggest that people would devote more energy to positively valenced stimuli. This would result in systematic processing of arguments presented on the red paper, in the positive audience response condition, and in the smiling face condition; again, this was not the case.

The results have implications for other models involving differential processing strategies (e.g., the Elaboration Likelihood

Model of Persuasion, Petty & Cacioppo, 1986, and the Heuristic-Systematic Model of Persuasion, Chaiken, 1980). It would appear to be the case that cues that are traditionally seen as peripheral (e.g., color, audience facial expression, and, possibly, other environmental, situational, or external cues that are orthogonal to message content; cf. Bohner, Chaiken, & Hunyadi, 1994; Heesacker, Petty, & Cacioppo, 1983) can affect whether people engage in elaboration or systematic processing. Argument strength affected elaboration and persuasion when arguments were presented on blue paper, were accompanied by serious response by an audience, or when arguments were accompanied by a subliminally presented frowning face, whereas argument strength had no effect when arguments were accompanied by positive affective cues.

Finally, the results are also consistent with data in the area of the positive-negative asymmetry in evaluative inference (e.g., Peeters, 1991; Pratto & John, 1991; Taylor, 1991). That is, much research has demonstrated that people are more attentive to negatively valenced information that is presented either in or out of awareness.

Limitations and Directions for Future Research

The present research suggests that external affective cues can act as a signal to process such that, negative cues cause people to engage in systematic processing and positive cues cause people to

engage in less systematic/more heuristic processing. There are, however, several limitations to the present research. First, the cues used in this research were rather limited in scope (i.e., color and facial expressions). Thus, there are potential threats to external validity (Cook & Campbell, 1979): It is unclear whether the effects generalize beyond these cues. Future research should address a broader variety of external affective cues (e.g., odor; cf. Razran, 1940).

Second, the extension of the cognitive tuning aspect of the affect as information hypothesis to external affective cues would suggest that cuing people to the external cues would attenuate the effects of the cues on processing and judgment (i.e., in the same manner that providing people with an external attribution for moods attenuates the effects of mood state on judgment; see, e.g., Schwarz & Clore, 1983; Sinclair et al., 1994). The present series of studies was not designed to address this issue; however, it appears to be a potentially fruitful venue for future research.

Third, my position might appear to be at odds with the hedonic contingency position regarding mood and processing (e.g., Wegener & Petty, 1994). Wegener, Petty, and Smith (1995) demonstrated that happy people would elaborate and engage in central route/systematic processing of arguments when the issue addressed was one that was considered to be positive in valence. Consistent with this position,

Sinclair et al. (2000) demonstrated that happy people would process messages that were attributed to a likeable source. It might be the case that these cues are externally attributed and are not seen as being informative about the participants' own lives. Furthermore, the affective cues are directly tied to the argument topic in the Wegener et al. work and to the argument source in the Sinclair et al. work. Thus, the information that the cues provide might not be analogous to affective cues that are not directly related to the content of the arguments or the source of the arguments. Again, future research should address this issue.

Fourth, while I argue that my data are inconsistent with a stop rule explication of mood effects, additional research is needed to bolster this claim. As I discussed earlier, the stop rule position might suggest that positive cues cause people to continue to process because they ask themselves whether they are enjoying what they are doing; they conclude that they are, and continue to process. Negative cues, however, would cause people to stop processing because they conclude that they are not enjoying what they are doing. This pattern of effects would correspond to the exact opposite of the pattern of my results. However, this argument is predicated on the assumption that the default stop rule involves enjoyment of the task. If the default stop rule involves whether people have acquired enough information to make a

judgment (see Martin et al., 1993), positive cues could cause people to stop processing and negative cues could cause people to continue to process (i.e., my pattern of effects). Whereas it appears that the cognitive tuning extension of affect as information provides a more parsimonious explanation of the results, stop rules cannot be ruled out at this point. Thus, future research that provides explicit stop rules could disentangle the two positions.

Finally, the results of Study 2, 3, and those of Ottati et al. (1997) might appear to conflict with relatively recent work by Petty (1999). Petty had people read strong or weak arguments and later, in an apparently unrelated study, had them wear headphones under the auspices of a consumer psychology study. He had the participants either nod up and down or shake their heads from side to side while wearing the headphones. He then measured attitudes related to the arguments that people had read. The head movements affected attitudes toward the issue to which the participants had been exposed earlier (i.e., before nodding or shaking). People in the nod condition appeared to agree with their attitudes and those in the strong argument condition differed profoundly on attitude reports from those in the weak condition. This difference was attenuated in the shake condition, apparently due to people disagreeing with their attitudes.

Of course, I have shown that audience facial expression affects elaboration in a manner that would appear to diverge from the Petty results. The Ottati et al. effects, while consistent with my effects, also appear to diverge from those of Petty. However, both my cues and the Ottati cues were presented while people were encoding and, presumably, elaborating (or failing to elaborate) the messages. The Petty cues were presented post encoding and, I argue, presumably, post elaboration. Thus, affective cues might have different effects depending upon whether they are present during versus after encoding. I believe that cues presented during encoding and problem solving affect elaboration likelihood, attitudes, and problem solving accuracy. However, cues presented after attitudes have been formed, or after problem solving, might affect confidence in the attitudes or confidence in the solution of the problem.

I have designed a study to address this issue and expect to collect the data within the next year. In the context of a study addressing impromptu speeches, half of the participants will be randomly assigned to reading strong or weak arguments to a confederate who responds either favorably (i.e., smiling) or unfavorably (i.e., a serious facial expression). The other half of the participants will read the strong or weak arguments first, write an opinion speech based on the arguments, and present the speech to the confederate,

who will respond either favorably or unfavorably. I expect to find my pattern of effects for the people who receive audience cues during encoding and I expect to find the Petty pattern in people who receive audience cues after encoding.

If the audience response occurs during encoding of the arguments, it should be perceived as an elaboration cue. If the audience cue occurs after elaboration has already occurred (i.e., after the arguments were encoded), participants should interpret the positive audience cues as the audience's agreement with the participants' own impressions of the arguments and lead to augmentation of the argument strength effect on the participants' own attitudes toward comprehensive exams. Negative audience cues should be interpreted as disagreement with the participants' impression of the arguments and lead to attenuation of the argument strength effect on the participants' attitudes. As in Studies 1 and 2, the audience's facial expression should have no effect on affective states in both conditions, thus, indicating that experienced affect is not implicated in the effect.

General Implications

The results of the three studies suggest a direct link between external affective cues and processing strategy. Cues with affective connotations, presented in or out of awareness, such as color or facial expression may inform people about the nature of their lives and of the

situation and elicit processing strategy differences through cognitive tuning. Presenting people with positive external affective cues may (mis)cue participants and lead them to believe that their lives and decision-making processes are good and that the situation is benign, suggesting that heuristic/nonsystematic processing is sufficient. Such a processing strategy, although conserving cognitive resources, can lead to inaccurate assessment of persuasive arguments. Presenting people with negative cues may suggest that their lives and decision-making processes are not good and that the situation is problematic. As a result, participants process systematically.

The results also suggest that mood does not need to mediate the effect of affective cues on processing strategy. While different cues convey differential affective information, they may not need to elicit the experience of moods in the participants in order to have impact. An external affective cue may be sufficient to influence processing strategy directly.

Finally, the results of the Soldat et al. (1997) studies and the present studies might have implications for other research involving "mood." Isen and Baron (1991) review a number of mood inductions used in the area of mood research. Many of these inductions involve subtle manipulations that might, in fact, be acting as affective cues rather than mood inductions per se. For example, Isen and Levin

(1972) gave participants cookies. Isen and her colleagues have also had participants find a dime in a phone booth, receive a free sample notepad, given participants candies or refreshments, had participants receive positive feedback about perceptual-motor skills, and win at a computer game (Isen & Baron, 1991). Furthermore, in much of the pioneering work, no manipulation checks were conducted. Indeed, Mackie and Worth (1989) led people to believe that they had won two dollars in a lottery and provided no manipulation check. Finally, Bohner, Crow, Erb, & Schwarz (1992) had participants find either one German mark or an onion in the coin slot in a phone booth; their manipulation check was nonsignificant ($p < .07$ one-tailed). Thus, it might be the case that many of the mood-related results reported in the literature are, in fact, results of affective cues rather than induced moods.

Conclusions

The results suggest that cognitive tuning can be extended to situations involving external affective signals such as color and audience facial expressions, and to the case of facial expressions that are not consciously perceived. Positive external affective cues promote peripheral or nonsystematic/heuristic processing, whereas negative external affective cues promote elaboration or systematic processing.

These cues can be external and can impact upon processing strategy without affecting mood.

In a broader sense, I believe that our thought processes are tuned to meet situational requirements. These requirements can be conveyed by features of the situation that are relatively blatant and obvious (see, e.g., Wegner & Vallacher, 1986), relatively subtle (as in Studies 1 and 2; Ottati et al., 1997; Sinclair et al., 1994; Soldat et al., 1997), and extremely subtle (i.e., unconscious; Study 3). The tuning can also be conveyed by the "internal" experiences of the person (e.g., mood effects; see, e.g., Bless et al., 1990; Schwarz, 1990; Schwarz & Clore, 1983; Sinclair, 1988; Sinclair & Mark, 1992; proprioceptive feedback about approach and avoidance; see Friedman & Förster, in press, who demonstrated that muscle tension related to pushing something away from you signals a problem whereas muscle tension associated with pulling something toward you signals a benign cue). Thus, I believe that we are exquisitely tuned to our environments on multiple levels; this seems to be an adaptive mechanism for signaling benign or important situations that require differential attention and differential processing strategies.[2]

Endnotes

[1] The recall measure was positively skewed and was transformed to normality through a square root transformation. The reported means are based on the untransformed data.

[2] I would like to thank Norbert Schwarz for suggesting this broader conclusion.

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Appendix A

Color and Persuasion Script

(Place packets upside down with the consent form face up on top of them) Write on Board (You'll need to say this and direct participants to sit as they enter the room):

1) Fill the room from front to back and left to right.
2) Sit at a seat marked with your appropriate gender (M or F).
3) Do not look through the packets until instructed to do so.

I'm _____, and I'm working with Dr. Johnson on a study addressing impression formation. We've color coded forms of our questionnaire to correspond to different orders of arguments that people will read which aids us in coding our data. Please read and sign the consent form in front of you and place it face down on the desk when you're done.

Please don't look through the rest of the material until I ask you to.

(*When participants have completed the consent forms*)

I'm collecting data on the impressions that we form of a person based on arguments the person has made. These arguments are from a recent article in the University of Alberta Faculty Newsletter concerning the issue of instituting comprehensive final exams for graduating university students. The person who made the arguments heads the committee at the university that is considering implementing comprehensive final exams at the U of A.

Comprehensive exams would be a test of what a university student had learned in their major subject area prior to graduation, and a certain score would be required for the student to graduate. I'm interested in the impressions that you form of the person presenting the arguments in favor of comprehensive exams based on the arguments he presents. There are many sources of first impressions like looks, dress, voice, etc. I'd like you to read the arguments that the person presents, and try to form an impression of him.

The first page of your packet contains a control questionnaire so that we can statistically control for issues that might relate to your impressions. After you've completed the control questionnaire, turn the page and read the arguments. The nine arguments he presented are typed on nine small pages. Read through the arguments once only, in the order that they are presented, and then proceed through the entire packet. Be sure to read and follow the instructions on each

page, and make sure to go through the booklet in order. Once you've turned a page, do not turn back and change your responses. When you've completed the entire booklet, place it face down on your desk and wait quietly for further instructions. So, read the arguments once only, and proceed through the entire packet. The first page after the arguments, presents instructions for the rest of the packet. After reading the arguments, read these instructions and then turn to the next page of the packet. Do not write on the page with these instructions. Please turn over your packet.

Begin now.

(When all participants are done: Pick up colored booklets and hold them in your hands while saying:)

I need to ask you one question before I hand out the evaluation questionnaires and get you to evaluate the person who presented the arguments. Please write your response on the back of the last page of your packet. Please tell me what you think I'm studying and give me any impressions that you have. Again, please tell me what you think I'm studying and give me any impressions that you have. Please be brief, few sentences should suffice.

Actually there is one more thing I need, this time put your response on the front of the booklet. If you have been in another study that used similar arguments - please make a note of that on the front of the booklet. This does not affect you in any way, but I need to know this.

(*When all participants are done*, debrief)

Appendix B

Impression Formation Study

Informed Consent Form

I, _____ agree to participate in the impression formation study conducted in the Department of Psychology at University of Alberta. I realize that I will read a sample of a person's writing (a series of arguments) and then complete several short questionnaires. I know that my responses are totally anonymous and that my name cannot be associated with the data in any way (this consent form will be handed in separately from the data).

I realize that due to the nature of the hypothesis, further knowledge at this time could bias the results of the study and that I will be fully debriefed upon completion of the session. I know that the entire study will take approximately 1 hour to complete and that I will receive 1 research participation credit. Further I know that I am free do discontinue my participation at any time without penalty or loss of credit.

Signed_____

Date_____

Appendix C

Arguments

Strong Arguments

The National Scholarship Achievement Board recently revealed the results of a five year study conducted on the effectiveness of comprehensive exams at Duke University. The results of the study showed that since the comprehensive exam has been introduced at Duke, the grade point average of undergraduates has increased by 31%. At comparable schools without the exams, grades increased by only 8% over the same period. The prospect of a comprehensive exam clearly seems to be effective in challenging students to work harder and faculty to teach more effectively. It is likely that the benefits observed at Duke University could also be observed at other universities that adopt the exam policy.

An interesting and important feature of the comprehensive exam requirement is that it has led to a significant improvement in the quality of undergraduate teaching in the schools where it has been tried. Data from the Educational Testing Service confirm that teachers and courses at the schools with comprehensive exams were rated more positively by students after the exams than before. The improvement in teaching effectiveness appears to be due to departments placing more emphasis on high quality and stimulating teaching because departments look bad when their majors do poorly on the exam. For

example, at the University of Florida, student ratings of courses increased significantly after comprehensive exams were instituted.

One aspect of the comprehensive exam requirement that students at the schools where it has been tried seem to like is that all regular final examinations for graduating university students are typically eliminated. This elimination of final exams in all courses for graduating university students allows them to better integrate and think about the material in their major area just prior to graduation rather than "wasting" a lot of time cramming to pass tests in courses in which they are really not interested. Students presently have to take too many courses in subjects that are irrelevant to their career plans. The comprehensive exam places somewhat greater emphasis on the student's major and allows greater concentration on the material that the student feels is most relevant.

Graduate schools and law and medical schools are beginning to show clear and significant preferences for students who received their undergraduate degrees from institutions with comprehensive exams. As the Dean of the Harvard Business School said: "Although Harvard has not and will not discriminate on the basis of race or sex, we do show a strong preference for applicants who have demonstrated their expertise in an area of study by passing a comprehensive exam at the undergraduate level." Admissions officers of law, medical, and

graduate schools have also endorsed the comprehensive exam policy and indicated that students at schools without the exams would be at a significant disadvantage in the very near future. Thus, the institution of comprehensive exams will be an aid to those who seek admission to graduate and professional schools after graduation.

Faculty members at universities with the comprehensive exams who were interviewed by researchers from the Carnegie Commission on Higher Education revealed that the comprehensive exams appeared to provide an incentive for students to study the material in their major area. A thorough study undertaken by the Department of Education at the University of Notre Dame showed that universities with comprehensive exams have resisted the national trend of declining scores on standardized achievement tests. Average scores on achievement tests for the universities with comprehensive exams have actually risen over the last five years.

A member of the Board of Curators has stated publicly that alumni nation-wide have refused to increase their contributions to the University because of what they feel are lax educational standards. In fact, the prestigious National Accrediting Board of Higher Education (NAB) has recently rejected the University's application for membership citing lack of a comprehensive exam as a major reason. Accreditation by the NAB enhances a university's reputation to

graduate schools, employers, and demonstrates to alumni that the school is worth supporting. A recent survey of influential alumni in corporations and the provincial legislature has revealed that contributions would improve significantly if the exams were instituted. With increased alumni support, continued increases in tuition might be avoided.

A study conducted by the Educational Testing Service of Princeton, New Jersey revealed that most of the Ivy League schools and several of the Big 10 universities have comprehensive exams for graduating university students to maintain their academic excellence. Professors at those schools who were interviewed recently said that comprehensive exams for graduating university students assured that only high quality and knowledgeable students would be associated with the university. This, of course, increases the prestige of current students, alumni of the school, and the university as a whole. The exams should be instituted to increase the academic reputation of the university. A national educator's publication recently predicted that within the next 10 years, the top universities would have the exam policy, and the weaker ones would not.

A study by the U.S. Department of Education revealed that universities with the comprehensive exam requirement average about 32% more financial aid available to students than comparable

universities without the exams. Richard Collings, Director of Financial Aid at the University of Southern California (USC) has written that since the comprehensive exam was instituted at USC five years ago, more individuals and corporations have been willing to donate money for student scholarships.

Data from the University of Virginia, where comprehensive exams were recently instituted, indicate that the average starting salary of graduates increased over $4000 over the two-year period in which the exams were begun. At comparable universities without comprehensive exams, salaries increased only $850 over the same period. As Saul Siegel, a vice-president of IBM put it in Business Week recently, "We are much quicker to offer the large salaries and executive positions to these kids because by passing their area exam, they have proven to us that they have expertise in their area rather than being people who may or may not be dependable and reliable." Another benefit is that universities with the exams attract larger and more well-known corporations to campus to recruit students for their open positions. The end result is that students at schools with comprehensive exams have a 55% greater chance of landing a good job than students at schools without the exams.

Weak Arguments

The National Scholarship Achievement Board recently revealed the results of a study they conducted on the effectiveness of comprehensive exams at Duke University. One major finding was that student anxiety had increased by 31%. At comparable schools without the exam, anxiety increased by only 8%. The Board reasoned that anxiety over the exams, or fear of failure, would motivate students to study more in their courses while they were taking them. It is likely that this increase in anxiety observed at Duke University would also be observed and be of benefit at other universities that adopt the exam policy.

An interesting and important feature of the comprehensive exam requirement is that if the exams were instituted nation-wide, students across the country could use the exam to compare their achievements with those of students at other schools. Data from the Educational Testing Service confirm that students are eager to compare their grades in a particular course with those of other students. Just imagine how exciting it would be for students in the west to be able to compare their scores with those of students from the east, for example. This possibility for comparison would provide an incentive for students to study and achieve as high a score as possible

so they would not be embarrassed when comparing scores with their friends.

One feature of the comprehensive exam requirement that students at the schools where it has been tried seem to like is that passing the exams provides a very difficult challenge. For example, many students want jobs in business when they graduate and the corporate world is very tough. Yet, most student's lives are filled with few challenges whatsoever. Everything has been provided for them since the day they were born. It's not that students are not grateful, but knowing that they had to pass a difficult exam before they graduated would prepare them for the hard and cold realities of life. Students would be nervous about passing the exam and fear that if they did not pass and graduate, four years of time would be wasted. However, that is what life is all about--taking risks and overcoming them. Having to pass a comprehensive exam is a challenge most students would welcome.

Graduate students have always had to take a comprehensive exam in their major area before receiving their degrees, and it is only fair that undergraduates should have to take them also. As the Dean of the Harvard Business school said, "If a comprehensive exam is considered necessary to demonstrate competence for a masters or doctoral degree, by what logic is it excluded as a requirement for the

bachelors degree? What administrators don't realize is that this is discrimination just like discrimination against Blacks or Jews. There would be a lot of trouble if universities required only whites to take comprehensive exams but not Blacks. Yet universities all over the country are getting away with the same thing by requiring graduate students but not undergraduates to take the exams." Thus, the institution of comprehensive exams could be as useful for undergraduates as they have been for graduate students.

Faculty members at universities with the comprehensive exams who were interviewed by researchers from the Carnegie Commission on Higher Education revealed that they liked the exams because it reduced the number of tests they felt they had to give in their classes knowing the students would still face one ultimate test of their knowledge in the comprehensive exam. A study at Notre Dame showed that this reduction in regular course tests saved enough paper to cover the cost of painting two classrooms.

A member of the Board of Curators has stated publicly that his brother had to take a comprehensive exam while in university and now he is manager of a large restaurant. He indicated that he realized the value of the exams since their father was a migrant worker who didn't even finish high school. He also indicated that the university has received several letters from parents in support of the exam. In fact, 4

of the 6 parents who wrote in thought that the exams were an excellent idea. Also, the prestigious National Accrediting Board of Higher Education seeks input from parents as well as students, faculty, and administrators when evaluating a university. Since most parents contribute financially to their child's education and also favor the exams, the university should institute them. This would show that the university is willing to listen to and follow the parents' wishes over those of students and faculty who may simply fear the work involved in comprehensive exams.

A study conducted by the Educational Testing Service of Princeton, New Jersey revealed that many universities are considering adopting comprehensive exams. Thus, any university that adopted the exams could be at the forefront of a national trend. Some professors at schools with the exams who were interviewed felt that high school students would be impressed by a university that kept pace with current trends. In fact, whether or not a school had a comprehensive exam might be a determining factor in their choice of a university. Therefore, the enrollments of universities with the exams should increase as the information about the exams spreads among high school students.

A study by the U.S. Department of Education revealed that several national testing companies were developing comprehensive

exams for use by universities in the U.S. The tests would be similar to the SAT and ACT tests which currently generate millions of dollars for the companies that make them. Richard Collings, a former Director of Financial Aid at the University of Southern California who now works for the Educational Testing Service, wrote recently in Business Week: "At ETS, we are not pushing comprehensive exams simply because of the huge amount of money involved. We are genuinely interested in marketing a good product. Just as our SAT and GRE tests are used to determine who is qualified for university and graduate work, so too should our comprehensive exams be used to determine who should graduate from university. We expect to have 32% of the market in 5 years.

Data from the University of Virginia show that some students favor the comprehensive exam policy for graduating university students. For example, one faculty member asked his son to survey his fellow students at that school since it recently instituted the exams. Over 55% of his son's friends agreed that in principle, the exams would be beneficial. Of course, they didn't all agree but the fact that most did proves that undergraduates want the exams. As Saul Siegel, a student whose father is a vice-president of IBM wrote in the school newspaper: "The history of the exams can be traced to the ancient Greeks. If comprehensive exams were to be instituted, we

could feel pleasure at following traditions begun by Plato and Aristotle. Even if there were no other benefits of the exams, it would be worth it just to follow tradition."

Appendix D

Attitudes toward Comprehensive Final Exams for Graduating University Students

Before you evaluate the author of the arguments, I need to ask you a few questions. I'd like an indication of your feelings toward the issue of the implementation of comprehensive final exams for graduating students because your personal opinions about comprehensive final exams may affect your impression of the person who wrote the arguments. This allows me to statistically control for any effects that your attitudes toward comprehensive final exams have on your impressions of the writer.

Please indicate your attitudes toward comprehensive final exams for graduating university students by circling the appropriate number on each of the following scales.

1. The idea of comprehensive final exams for graduating university students is:

1	2	3	4	5	6	7	8	9
very bad								very good

2. I believe that comprehensive final exams for graduating university students would be:

1	2	3	4	5	6	7	8	9
very harmful								very beneficial

3. Instituting comprehensive final exams for graduating university students would be:

1	2	3	4	5	6	7	8	9
very foolish								very wise

4. I feel that having comprehensive final exams for graduating university students is:

1	2	3	4	5	6	7	8	9
not at all favorable								very favorable

Appendix E

PRESENT MOOD STATE INVENTORY

Because how you feel right now might relate to the impression that you form of the person who presented the arguments in favor of comprehensive examinations, we need to measure your mood before we have you evaluate the person so that we can statistically control for any mood effects on your impression. Please circle the appropriate number on each of the following scales that best describes how you feel **right now, today**.

	Strongly Disagree		Neither Agree Nor Disagree		Strongly Agree
1. Very bad	1	2	3	4	5
2. Very sedate	1	2	3	4	5
3. Very good	1	2	3	4	5
4. Very aroused	1	2	3	4	5
5. Very negative	1	2	3	4	5
6. Very active	1	2	3	4	5
7. Very positive	1	2	3	4	5
8. Very passive	1	2	3	4	5
9. Very alert	1	2	3	4	5

Please continue on the next page

	Strongly Disagree		Neither Agree Nor Disagree		Strongly Agree
10. Very happy	1	2	3	4	5
11. Very sad	1	2	3	4	5
12. Very tired	1	2	3	4	5
13. Very miserable	1	2	3	4	5
14. Very quiet	1	2	3	4	5
15. Very activated	1	2	3	4	5
16. Very glad	1	2	3	4	5
17. Very inactive	1	2	3	4	5
18. Very unhappy	1	2	3	4	5
19. Very pleased	1	2	3	4	5
20. Very stimulated	1	2	3	4	5

WHEN YOU ARE DONE, GO ON TO THE NEXT PAGE

Appendix F

DEBRIEFING

I need to tell you a little bit more about what we were studying here today. First, I'd like to apologize for not telling you everything in advance, but I think you'll understand why I wasn't able to. I was really studying the effects of affective cues, in this case color, on how we process persuasive information and how this might affect our attitudes toward an issue like comprehensive final exams for graduating university students. For some people the arguments were printed on red paper, a positive cue, and for some people the arguments were printed on blue paper, negative cue. I guess you can see that if I told you that I was changing the valence of the affective cue to see how this affected your own response to the arguments, you might have responded differently than you did. The reason that we sometimes don't tell people exactly what we're studying and exactly what we expect to find before our studies is because this often causes people to give us the responses that they think that we want, rather than responding how they really would respond without expectations. People responding based on what they think the experimenters want rather than how they would truthfully respond, is called demand characteristics or demand awareness effects. This can be a problem in research. So, I hope you can see how having people know exactly what we're looking for would lead to problems in the interpretation of

our data. So, again, I'm sorry that I didn't tell you everything ahead of time, but I guess that you can see that if I told you we were looking at how color of paper affected your responses to the arguments, you might have answered a little differently. One thing that I need to ask you is, please don't tell other students what we were studying because, if others know, our data wouldn't be valid and this would cause us a lot of problems in the future with our research.

The independent variables manipulated in this study were color of paper and argument strength. Some people got red paper and some got blue paper. So, color was one of our independent variables and it had two levels – red and blue. The second independent variable was argument strength. Some people read strong arguments, and some people read weak arguments advocating the institution of comprehensive final exams for graduating university students. We believe that people exposed to the positive cue, red color, would pay less attention to the arguments, wouldn't discriminate between strong and weak arguments, and as a result would be persuaded equally by both types. People exposed to the negative cue, blue color, on the other hand, should pay attention to the arguments and be persuaded by strong arguments and rejected weak arguments.

Recent research coming from our lab and other labs around the world suggests that positive environmental cues like smiling lead

people to process information nonsystematically or heuristically and pay less attention to detail, whereas negative cues, like frowning, lead people to devote more energy to actively processing information - they appear to process systematically, leading to more accurate and less biased judgments. We believe that audience response can act as such a cue and can thus influence depth of processing and persuasion.

Are there any questions? I'd like to thank you for coming out to this session. Without the help of people like you, we couldn't answer most important scientific questions in psychology. You've been a great help. If you have any questions about the study or just general questions related to the issues we addressed here, contact Dr. Rob Sinclair or Alex Soldat at 492-3822 or 492-3229. Again, I want to apologize for not telling you everything in advance. Please don't let other people know what we're studying, because that knowledge would bias the results of our research.

Thank you very much.

Give to the participant: credit sheet
take home debriefing

Appendix G

Face and Comprehensive Exams Script

Have ready:

1. Consent forms on both desks
2. The proper set of the 5 arguments
3. Speaker evaluation forms
4. Argument evaluation forms
5. Take home debriefing
6. Credit sheet

Hi, are both of you here for Alex 05?

Please come in and have a seat at this table.

(After participants are seated)

I'm _____ and I'm working with Dr. Johnson on a study addressing issues related to public speaking. I'm interested in how people's performance and their perceptions of performance are related. I'll have one of you present 5 arguments in front of an audience. These arguments support the institution of comprehensive exams for graduating university students and are from a recent article in the University of Alberta Faculty Newsletter concerning the issue of instituting comprehensive final exams for graduating university students. The person who made the arguments heads the committee at the university that is considering implementing comprehensive final

exams at the U of A.

Comprehensive exams would be a test of what a university student had learned in their major subject area prior to graduation, and a certain score would be required for the student to graduate.

One of you will be the argument presenter and one of you will be the audience. So we need to hold a random draw to decide who does what this session. (To the subjects) Would one of you draw a slip of paper from this box and tell me what it says. (Subject says "presenter") Oh, that means that you will be the one speaking and you will be the audience. (Put the slips back in the box)

Before we begin, please read and sign the consent form and place it on the desk when you're done.
(*Wait until they are finished*)

To the Presenter: (while holding the arguments)
I want you to read these 5 arguments to the other person. It is very important for you to read the arguments from the sheets clearly; however, it is also important that you maintain as much eye contact as possible throughout your presentation. At the end of your

presentation, you will be evaluating your own performance as well as evaluating how you feel the audience member perceived you, and the audience member will evaluate your performance and his/her perceptions of how he/she believes you think you performed.
Please stand here (Show the presenter where to stand). Please sit here (show the confederate where to sit).

(To both the presenter and the confederate):
Remember, in regard to the evaluations that you'll both be completing later, perceptions of performance are based on many different factors, like the speaker's tone of voice, amount of eye contact maintained, how much emphasis and inflection the speaker used, etc...

To Presenter:
I need to remind you that you need to make as much eye contact with the audience as possible. One way to improve your public speaking performance is to make eye contact with the audience after every point you make. To make it easier for you, we have marked, with stars, the appropriate spots where you must make eye contact. So, every time you come across a star when reading the arguments, make eye contact. You will find it much easier if you speak slowly.
Do you have any questions?

Please begin!

(To both, after presenter is finished) Please have a seat over here.

(Giving to both the evaluation packet) Please complete the evaluation form. Where you are done place it face down on the desk.

(*When done*)

I need to get you to complete an additional questionnaire. (Giving to both the argument evaluation packet) I need to get an indication of your attitudes toward comprehensive final examinations because your attitudes might relate to the speaker's perceptions of performance and to the audience member's perceptions as well. This way, I can statistically control for attitudes when doing my analyses. Please read the instructions and complete this entire packet. When you're done, place it on the desk to your right.

I need to ask both of you one final question. Please write your response on the back of the argument evaluation form. Please tell me what you think I was studying and give me any impressions that you have. Again, please tell me what you think I was studying and give me any impressions that you have.

Appendix H

Informed Consent Form

Public Speaking Study

I _____ agree to participate in the public speaking study being conducted by Dr. C. Johnson. I realize that I will either a) present a speech and evaluate my performance and evaluate how my speech was received or b) that I will serve as audience and evaluate the speaker's performance. I know that my responses are totally anonymous and that my name cannot be associated with the data in any way (this consent form will be handed in separately from the data). I know that there are no risks associated with the procedure. I realize that I am free to discontinue my participation at any time without penalty or loss of credit. Due to the nature of the hypothesis, I realize that the entire rationale for the study will be discussed with me upon completion because more knowledge at this time might bias the results of the study. I know that the entire study takes approximately 45 minutes to an hour to complete and that I will receive 1 research participation credit.

Signed _____

Date _____

Experimenter _____

Appendix I

Arguments

Strong Arguments

The National Scholarship Achievement Board recently revealed the results of a five year study ** conducted on the effectiveness of comprehensive exams at Duke University.** The results of the study showed that since the comprehensive exam has been introduced at Duke,** the grade point average of undergraduates has increased by 31%. ** At comparable schools without the exams, **grades increased by only 8% over the same period. ** The prospect of a comprehensive exam clearly seems to be effective in challenging students to work harder and faculty to teach more effectively. ** It is likely that the benefits observed at Duke University could also be observed at other universities that adopt the exam policy. **

An interesting and important feature of the comprehensive exam requirement ** is that it has led to a significant improvement in the quality of undergraduate teaching in the schools where it has been tried. ** Data from the Educational Testing Service confirm that teachers and courses at the schools with comprehensive exams were rated more positively by students after the exams than before. ** The improvement in teaching effectiveness appears to be due to departments placing more emphasis on high quality and stimulating teaching ** because departments look bad when their majors do poorly

on the exam. ** For example, at the University of Florida, ** student ratings of courses increased significantly after comprehensive exams were instituted. **

One aspect of the comprehensive exam requirement that students at the schools where it has been tried ** seem to like is that all regular final examinations for graduating university students are typically eliminated. ** This elimination of final exams in all courses for graduating university students ** allows them to better integrate and think about the material in their major area just prior to graduation ** rather than "wasting" a lot of time cramming to pass tests in courses in which they are really not interested. ** Students presently have to take too many courses in subjects that are irrelevant to their career plans. ** The comprehensive exam places somewhat greater emphasis on the student's major ** and allows greater concentration on the material that the student feels is most relevant. **

Graduate schools and law and medical schools are beginning to show clear and significant preferences ** for students who received their undergraduate degrees from institutions with comprehensive exams. ** As the Dean of the Harvard Business School said: ** "Although Harvard has not and will not discriminate on the basis of race or sex, ** we do show a strong preference for applicants who have

demonstrated their expertise in an area of study by passing a comprehensive exam at the undergraduate level." ** Admissions officers of law, medical, and graduate schools have also endorsed the comprehensive exam policy ** and indicated that students at schools without the exams would be at a significant disadvantage in the very near future. ** Thus, ** the institution of comprehensive exams will be an aid to those who seek admission to graduate and professional schools after graduation. **

Faculty members at universities with the comprehensive exams ** who were interviewed by researchers from the Carnegie Commission on Higher Education ** revealed that the comprehensive exams appeared to provide an incentive for students to study the material in their major area. ** A thorough study undertaken by the Department of Education ** at the University of Notre Dame ** showed that universities with comprehensive exams have resisted the national trend of declining scores on standardized achievement tests. ** Average scores on achievement tests for the universities with comprehensive exams ** have actually risen over the last five years.**

A member of the Board of Curators has stated publicly ** that alumni nation-wide have refused to increase their contributions to the University ** because of what they feel are lax educational standards. ** In fact, ** the prestigious National Accrediting Board of Higher

Education (NAB) has recently rejected the University's application for membership ** citing lack of a comprehensive exam as a major reason. ** Accreditation by the NAB enhances a university's reputation to graduate schools, employers, ** and demonstrates to alumni that the school is worth supporting. ** A recent survey of influential alumni in corporations and the provincial legislature ** has revealed that contributions would improve significantly if the exams were instituted. ** With increased alumni support, ** continued increases in tuition might be avoided.**

A study conducted by the Educational Testing Service of Princeton, New Jersey ** revealed that most of the Ivy League schools and several of the Big 10 universities **have comprehensive exams for graduating university students to maintain their academic excellence. ** Professors at those schools who were interviewed recently ** said that comprehensive exams for graduating university students assured that only high quality and knowledgeable students would be associated with the university. ** This, of course, ** increases the prestige of current students, alumni of the school, and the university as a whole. ** The exams should be instituted to increase the academic reputation of the university. ** A national educator's publication recently predicted that within the next 10 years, ** the top universities would have the exam policy, and the weaker ones would

not. **

A study by the U.S. Department of Education revealed that universities with the comprehensive exam requirement average about 32% more financial aid available to students ** than comparable universities without the exams. ** Richard Collings, ** Director of Financial Aid at the University of Southern California (USC) ** has written that since the comprehensive exam was instituted at USC five years ago, ** more individuals and corporations have been willing to donate money for student scholarships. **

Data from the University of Virginia, ** where comprehensive exams were recently instituted, ** indicate that the average starting salary of graduates increased over $4000 over the two-year period in which the exams were begun. ** At comparable universities without comprehensive exams, ** salaries increased only $850 over the same period. ** As Saul Siegel, ** a vice-president of IBM put it in Business Week recently, ** "We are much quicker to offer the large salaries and executive positions to these kids because by passing their area exam, ** they have proven to us that they have expertise in their area ** rather than being people who may or may not be dependable and reliable." ** Another benefit is that universities with the exams attract larger and more well-known corporations to campus** to recruit students for their open positions. ** The end result is that students at

schools with comprehensive exams have a 55% greater chance of landing a good job ** than students at schools without the exams. ** Weak Arguments

The National Scholarship Achievement Board recently revealed the results of a study they conducted on the effectiveness of comprehensive exams at Duke University. ** One major finding was that student anxiety had increased by 31%. ** At comparable schools without the exam, ** anxiety increased by only 8%. ** The Board reasoned that anxiety over the exams, or fear of failure, ** would motivate students to study more in their courses while they were taking them. ** It is likely that this increase in anxiety observed at Duke University would also be observed and be of benefit at other universities that adopt the exam policy. **

An interesting and important feature of the comprehensive exam requirement ** is that if the exams were instituted nation-wide, ** students across the country could use the exam to compare their achievements with those of students at other schools. ** Data from the Educational Testing Service confirm that students are eager to compare their grades in a particular course with those of other students. ** Just imagine how exciting it would be for students in the west to be able to compare their scores with those of students from the east, for example. ** This possibility for comparison would provide an

incentive for students to study and achieve as high a score as possible ** so they would not be embarrassed when comparing scores with their friends. **

One feature of the comprehensive exam requirement that students at the schools where it has been tried seem to like ** is that passing the exams provides a very difficult challenge. ** For example, many students want jobs in business when they graduate and the corporate world is very tough. ** Yet, most student's lives are filled with few challenges whatsoever. ** Everything has been provided for them since the day they were born. ** It's not that students are not grateful, ** but knowing that they had to pass a difficult exam before they graduated would prepare them for the hard and cold realities of life. ** Students would be nervous about passing the exam and fear that if they did not pass and graduate, ** four years of time would be wasted. ** However, that is what life is all about--taking risks and overcoming them. ** Having to pass a comprehensive exam is a challenge most students would welcome. **

Graduate students have always had to take a comprehensive exam in their major area before receiving their degrees, ** and it is only fair that undergraduates should have to take them also. ** As the Dean of the Harvard Business school said, ** "If a comprehensive exam is considered necessary to demonstrate competence for a

masters or doctoral degree, ** by what logic is it excluded as a requirement for the bachelors degree? ** What administrators don't realize is that this is discrimination just like discrimination against Blacks or Jews. ** There would be a lot of trouble if universities required only whites to take comprehensive exams but not Blacks.** Yet universities all over the country are getting away with the same thing by requiring graduate students but not undergraduates to take the exams." ** Thus, ** the institution of comprehensive exams could be as useful for undergraduates as they have been for graduate students. **

Faculty members at universities with the comprehensive exams who were interviewed by researchers from the Carnegie Commission on Higher Education ** revealed that they liked the exams because it reduced the number of tests they felt they had to give in their classes ** knowing the students would still face one ultimate test of their knowledge in the comprehensive exam. ** A study at Notre Dame showed that this reduction in regular course tests saved enough paper to cover the cost of painting two classrooms. **

A member of the Board of Curators has stated publicly that his brother had to take a comprehensive exam while in university and now he is manager of a large restaurant. ** He indicated that he realized the value of the exams since their father was a migrant worker who

didn't even finish high school. ** He also indicated that the university has received several letters from parents in support of the exam. ** In fact, 4 of the 6 parents who wrote in thought that the exams were an excellent idea. ** Also, the prestigious National Accrediting Board of Higher Education seeks input from parents ** as well as students, faculty, and administrators when evaluating a university. ** Since most parents contribute financially to their child's education and also favor the exams, ** the university should institute them. ** This would show that the university is willing to listen to and follow the parents' wishes over those of students and faculty ** who may simply fear the work involved in comprehensive exams.**

A study conducted by the Educational Testing Service of Princeton, New Jersey ** revealed that many universities are considering adopting comprehensive exams. ** Thus, any university that adopted the exams could be at the forefront of a national trend. ** Some professors at schools with the exams who were interviewed ** felt that high school students would be impressed by a university that kept pace with current trends. ** In fact, ** whether or not a school had a comprehensive exam might be a determining factor in their choice of a university. ** Therefore, ** the enrollments of universities with the exams should increase as the information about the exams spreads among high school students. **

A study by the U.S. Department of Education revealed ** that several national testing companies were developing comprehensive exams for use by universities in the U.S. ** The tests would be similar to the SAT and ACT tests ** which currently generate millions of dollars for the companies that make them. ** Richard Collings, a former Director of Financial Aid at the University of Southern California who now works for the Educational Testing Service, ** wrote recently in Business Week: ** "At ETS, we are not pushing comprehensive exams simply because of the huge amount of money involved. ** We are genuinely interested in marketing a good product. ** Just as our SAT and GRE tests are used to determine who is qualified for university and graduate work, ** so too should our comprehensive exams be used to determine who should graduate from university. ** We expect to have 32% of the market in 5 years. **

Data from the University of Virginia show that some students favor the comprehensive exam policy for graduating university students. ** For example, ** one faculty member asked his son to survey his fellow students at that school since it recently instituted the exams. ** Over 55% of his son's friends agreed that in principle, ** the exams would be beneficial. ** Of course, ** they didn't all agree but the fact that most did proves that undergraduates want the exams. ** As Saul Siegel, a student whose father is a vice-president of IBM wrote in

the school newspaper: ** "The history of the exams can be traced to the ancient Greeks. ** If comprehensive exams were to be instituted, ** we could feel pleasure at following traditions begun by Plato and Aristotle. ** Even if there were no other benefits of the exams, ** it would be worth it just to follow tradition." **

Appendix J

Speaker's Evaluation Form

Please circle the appropriate response on each of the following scales that best represents your response to each item

1. The audience member considered my presentation to be:

1 2 3 4 5 6 7

extremely ineffective extremely effective

2. In terms of persuading the audience member, I was:

1 2 3 4 5 6 7

not at all successful extremely successful

3. As I presented the arguments, the audience member made me feel:

1 2 3 4 5 6 7

not at all at ease extremely at ease

4. I felt anxious, during my presentation:

1 2 3 4 5 6 7

strongly disagree strongly agree

5. The audience member was:

1 2 3 4 5 6 7

not at all receptive to my presentation — extremely receptive to my presentation

6. The audience member appeared to:

1 2 3 4 5 6 7

disagree with the arguments — agree with the arguments

7. The audience member appeared to be:

1 2 3 4 5 6 7

extremely cold — extremely warm

8. The audience member appeared to be:

1 2 3 4 5 6 7

extremely sad — extremely happy

9. The audience member appeared to be:

1 2 3 4 5 6 7

extremely passive — extremely active

10. The audience member appeared to be:

1 2 3 4 5 6 7

not at all aroused extremely aroused

11. I felt nervous, during the presentation:

1 2 3 4 5 6 7

strongly agree strongly disagree

12. During the presentation, I felt:

1 2 3 4 5 6 7

extremely bad extremely good

13. During the presentation, I felt:

1 2 3 4 5 6 7

extremely sad extremely happy

Appendix K

Attitudes toward Comprehensive Final Exams for Graduating University Students

Before you evaluate the author of the arguments, I need to ask you a few questions. I'd like an indication of your feelings toward the issue of the implementation of comprehensive final exams for graduating students because your personal opinions about comprehensive final exams may affect your impression of the person who wrote the arguments. This allows me to statistically control for any effects that your attitudes toward comprehensive final exams have on your impressions of the writer.

Please indicate your attitudes toward comprehensive final exams for graduating university students by circling the appropriate number on each of the following scales.

1. The idea of comprehensive final exams for graduating university students is:

1	2	3	4	5	6	7	8	9
very bad								very good

2. I believe that comprehensive final exams for graduating university students would be:

1	2	3	4	5	6	7	8	9
very harmful								very beneficial

3. Instituting comprehensive final exams for graduating university students would be:

1	2	3	4	5	6	7	8	9
very foolish								very wise

4. I feel that having comprehensive final exams for graduating university students is:

1	2	3	4	5	6	7	8	9
not at all favorable								very favorable

Appendix L

DEBRIEFING

I need to tell you a little bit more about what we were studying here today. First, I'd like to apologize for not telling you everything in advance, but I think you'll understand why I wasn't able to. I was really studying the effects of audience cues on how we process persuasive information and how this might affect our attitudes toward an issue like comprehensive final exams for graduating university students. For some people, the audience member, who was actually working with me, was smiling and for some people he/she was frowning. I guess you can see that if I told you that I was changing the audience member's facial expression to see how this affected your own response to the arguments, you might have responded differently than you did. The reason that we sometimes don't tell people exactly what we're studying and exactly what we expect to find before our studies is because this often causes people to give us the responses that they think that we want, rather than responding how they really would respond without expectations. People responding based on what they think the experimenters want rather than how they would truthfully respond, is called demand characteristics or demand awareness effects. This can be a problem in research. So, I hope you can see how having people know exactly what we're looking for would lead to problems in the interpretation of our data. So, again, I'm sorry that I

didn't tell you everything ahead of time, but I guess that you can see that if I told you we were looking at how the audience affected your responses to the arguments, you might have answered a little differently. One thing that I need to ask you is, please don't tell other students what we were studying because, if others know, our data wouldn't be valid and this would cause us a lot of problems in the future with our research. Also, please don't let people know that the audience member is working with us – this would really mess up our study.

The independent variables manipulated in this study were audience member's facial expression and argument strength. Some people got a favorable audience response, a smile, and some got an unfavorable response, a frown. So, audience response was one of our independent variables and it had two levels – favorable and unfavorable. The second independent variable was argument strength. Some people presented strong arguments, and some people presented weak arguments advocating the institution of comprehensive final exams for graduating university students. We believe that people in front of a favorable audience would pay less attention to the arguments, wouldn't discriminate between strong and weak arguments, and as a result would be persuaded equally by both types. People in front of nonfavorable audience, on the other hand,

should pay attention to the arguments and be persuaded by strong arguments and rejected weak arguments.

Recent research coming from our lab and other labs around the world suggests that positive environmental cues like smiling lead people to process information nonsystematically or heuristically and pay less attention to detail, whereas negative cues, like frowning, lead people to devote more energy to actively processing information - they appear to process systematically, leading to more accurate and less biased judgments. We believe that audience response can act as such a cue and can thus influence depth of processing and persuasion.

Are there any questions? I'd like to thank you for coming out to this session. Without the help of people like you, we couldn't answer most important scientific questions in psychology. You've been a great help. If you have any questions about the study or just general questions related to the issues we addressed here, contact Dr. Rob Sinclair or Alex Soldat at 492-3822 or 492-3229. Again, I want to apologize for not telling you everything in advance. Please don't let other people know what we're studying, because that knowledge would bias the results of our research.

Thank you very much.

Give to the participant: credit sheet
take home debriefing

Appendix M

Subliminal Priming Study Script

I'm _____, and I'm working with Dr. Johnson on a study addressing impression formation. There are many ways to form an impression of a person, I'm interested in the effect of a sample of a person's writing on the impression that a reader forms of the writer. If you agree to participate in this study, please read and sign the consent form in front of you.

(*When participants have completed the consent forms*)

I'm collecting data on the impressions that we form of a person based on arguments the person has made. These arguments are from a recent article in the University of Alberta Faculty Newsletter concerning the issue of instituting comprehensive final exams for graduating university students. The person who made the arguments heads the committee at the university that is considering implementing comprehensive final exams at the U of A.

Comprehensive exams would be a test of what a university student had learned in their major subject area prior to graduation, and a certain score would be required for the student to graduate. I'm interested in the impressions that you form of the person presenting the arguments in favor of comprehensive exams based on the arguments he presents. There are many sources of first impressions

like looks, dress, voice, etc. I'd like you to read the arguments that the person presents, and try to form an impression of him.

The arguments will be presented to you on a computer screen. There will be one argument per page, screen. Read through the arguments and hit the space bar to advance to the next screen with the new argument. Please let me know when you are finished so I can give you the person impression questionnaire.

(*once finished with the computer task*)

I need to get you to complete an additional questionnaire **(Giving the argument evaluation packet)** in order to get an indication of your attitudes toward comprehensive final examinations. Your own attitudes might impact your impression of the writer of the arguments. This way, I can statistically control for attitudes when doing my analyses. Please read the instructions and complete this entire packet. When you're done, place it face down on the desk to your right.

(*When Done*)

Now I want you to go over your thoughts and label them. If the thought was favourable toward comprehensive exams, label it with a plus(+)sign; if the thought was unfavourable toward comprehensive exams, label it with a minus(-) sign; if the thought was neutral or irrelevant regarding comprehensive exams then label it with a zero(0).

(Give them their elaborations) When you are done, close the packet and place it face down in front of you.

(*when done*)

Now, can you please fill out the person impression questionnaire.

(hand them the impression questionnaire)

(*when done*)

I need to ask you one more question. Please write your response on the back of the last page of your packet. Please tell me what you think I'm studying and give me any impressions that you have. Again, please tell me what you think I'm studying and give me any impressions that you have. Please be brief, few sentences should suffice.

Actually there is one more thing I need, this time put your response on the front of the booklet. If you have been in another study that used similar arguments - please make a note of that on the front of the booklet. This does not affect you in any way, but I need to know this.

(*When done*, debrief)

Appendix N

Impression Formation Study

Informed Consent Form

I, _____ agree to participate in the impression formation study conducted in the Department of Psychology at University of Alberta. I realize that I will read a sample of a person's writing (a series of arguments presented on the computer screen) and then complete several short questionnaires. I know that my responses are totally anonymous and that my name cannot be associated with the data in any way (this consent form will be handed in separately form the data).

I realize that due to the nature of the hypothesis, further knowledge at this time could bias the results of the study and that I will be fully debriefed upon completion of the session. I know that the entire study will take approximately 1 hour to complete and that I will receive 1 research participation credit. Further I know that I am free do discontinue my participation at any time without penalty or loss of credit.

Signed_____

Date_____

Appendix O

Argument Evaluation Instructions

Before you evaluate the author of the arguments, I need to ask you a few questions. I'd like an indication of your feelings toward the issue of the implementation of comprehensive final exams for graduating students because your personal opinions about comprehensive final exams may affect your impression of the person who wrote the arguments. This allows me to statistically control for any effects that your attitudes toward comprehensive final exams have on your impressions of the writer.

DO NOT WRITE ANYTHING ON THIS PAGE. PLEASE READ THE INSTRUCTIONS ON THE TOP OF THIS PAGE AND THEN TURN TO THE NEXT PAGE OF THE PACKET AND COMPLETE THE REST OF THE PACKET IN THE ORDER THAT IT IS PRESENTED

Attitudes toward Comprehensive Final Exams for Graduating University Students

Please indicate your attitudes toward comprehensive final exams for graduating university students by circling the appropriate number on each of the following scales.

1. The idea of comprehensive final exams for graduating university students is:

1	2	3	4	5	6	7	8	9
very bad								very good

2. I believe that comprehensive final exams for graduating university students would be:

1	2	3	4	5	6	7	8	9
very harmful								very beneficial

3. Instituting comprehensive final exams for graduating university students would be:

1	2	3	4	5	6	7	8	9
very foolish								very wise

4. I feel that having comprehensive final exams for graduating university students is:

1	2	3	4	5	6	7	8	9
not at all favorable								very favorable

WHEN YOU ARE DONE, GO ON TO THE NEXT PAGE

Thought Listing

On this page, please list any and all thoughts you had while reading the speech addressing the institution of comprehensive final exams. These can include anything related to the arguments presented, the topic of comprehensive final exams, the context in which the speech was given, or anything else that you might have been thinking, including totally unrelated things. You may use the back of the page if necessary. Please separate each thought by drawing a line across the entire page under each thought.

WHEN YOU ARE DONE, GO ON TO THE NEXT PAGE

Argument Recall

Please recall in as much detail as possible the exact arguments that you presented regarding comprehensive final exams for graduating university students. You may use the back of the page, if necessary.

PLEASE STOP, CLOSE YOUR PACKET, TURN IT FACE DOWN, AND WAIT FOR FURTHER INSTRUCTIONS

Appendix P

DEBRIEFING:

This is actually the end of the experiment. I need to tell you a little bit more about what we were studying here today. First, I'd like to apologize for not telling you everything in advance, but I think you'll understand why I wasn't able to. I was really studying the effects of subliminal affective cues on how we process persuasive information and how this might affect our attitudes toward an issue like comprehensive final exams for graduating university students. For some people, a subliminal stimulus of a happy face was flashed on the screen during the presentation of the argument. For the other people the subliminal stimuli of a frowning face was flashed on the screen during the presentation of the arguments. I guess you can see that if I told you in advance that I was using a subliminal affective cue to see how it affected your own response to the arguments, you might have responded differently than you did. The reason that we sometimes don't tell people exactly what we're studying and exactly what we expect to find before our studies is because this often causes people to give us the responses that they think that we want, rather than responding how they really would respond without expectations. This is a demand characteristic or demand awareness effect and it could really mess up our results. One thing that I need to ask you is to not

inform other students about the nature of our research, as this would invalidate our data and jeopardize the results of our research.

The independent variables manipulated in this study were the subliminal affective sues presented (either happy face or frowning face) and the argument strength. Some people received a stimulus picture of a happy face, some people got a stimulus picture of a frowning face, and some were in the no picture control. The second independent variable was argument strength. Some people were presented strong arguments, and some people were presented weak arguments with regards to the institution of comprehensive final exams for graduating university students. We believe that people who received the subliminal smiling face picture would pay less attention to the argument and would not discriminate between strong and weak arguments. As a result they are likely to be persuaded equally by both types. Conversely, people who received the subliminal frowning face picture should pay attention to the arguments, and be persuaded by strong arguments and reject weak arguments.

Recent research coming from our lab and other labs around the world suggests that positive environmental cues like smiling lead people to process information non-systematically or heuristically, paying less attention to detail. Whereas negative cues, like frowning, lead people to devote more energy to actively processing information -

they appear to process systematically, leading to more accurate and less biased judgments. We are assessing whether subliminal affective cues (presented for durations so short that they are hard to notice) can impact the depth of processing and persuasion just as overt affective cues do.

Are there any questions? I'd like to thank you for coming out to this session. Without the help of people like you, we couldn't answer most important scientific questions in psychology. You've been a great help. Again, I want to apologize for not telling you everything in advance. Please don't let other people know what we're studying, because that knowledge would bias the results of our research.

(give credit sheet & standardized debriefing)